

MOSEK Licensing Guide

Release 11.2.8

MOSEK ApS

05 November 2026

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Chapter 1

Introduction

The **MOSEK** Optimization Suite is a commercial product that requires a valid license. This guide explains how the licensing system works and how to install a license.

Are you only interested in quick, simplified instructions? Jump directly to Sec. 4.

Chapter 2

Contact Information

Phone	+45 7174 9373	Office
	+45 7174 5700	Sales
Website	mosek.com	
Email		
	sales@mosek.com	Sales, pricing, and licensing
	support@mosek.com	Technical support, questions and bug reports
	info@mosek.com	Everything else.
Mailing Address		
	MOSEK ApS	
	Fruebjergvej 3	
	Symbion Science Park, Box 16	
	2100 Copenhagen O	
	Denmark	

You can get in touch with **MOSEK** using popular social media as well:

Blogger	https://blog.mosek.com/
Google Group	https://groups.google.com/forum/#!forum/mosek
Linkedin	https://www.linkedin.com/company/mosek-aps
Youtube	https://www.youtube.com/channel/UCvIyectEVLP31NXeD5mIbEw

Chapter 3

License Agreement

3.1 MOSEK end-user license agreement

Before using the **MOSEK** software, please read the license agreement available in the distribution at `<MSKHOME>/mosek/11.2/mosek-eula.pdf` or on the **MOSEK** website https://mosek.com/products/license-agreement. By using **MOSEK** you agree to the terms of that license agreement.

3.2 Third party licenses

MOSEK uses some third-party open-source libraries. Their license details follow.

zlib

MOSEK uses the *zlib* library obtained from the zlib website. The license agreement for *zlib* is shown in Listing 3.1.

Listing 3.1: *zlib* license.

```
zlib.h -- interface of the 'zlib' general purpose compression library
version 1.3.2, February 17th, 2026

Copyright (C) 1995-2026 Jean-loup Gailly and Mark Adler

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Jean-loup Gailly        Mark Adler
jloup@gzip.org          madler@alumni.caltech.edu
```

fplib

MOSEK uses the floating point formatting library developed by David M. Gay obtained from the netlib website. The license agreement for *fplib* is shown in Listing 3.2.

Listing 3.2: *fplib* license.

```
/****************************************************************
 *
 * The author of this software is David M. Gay.
 *
 * Copyright (c) 1991, 2000, 2001 by Lucent Technologies.
 *
 * Permission to use, copy, modify, and distribute this software for any
 * purpose without fee is hereby granted, provided that this entire notice
 * is included in all copies of any software which is or includes a copy
 * or modification of this software and in all copies of the supporting
 * documentation for such software.
 *
 * THIS SOFTWARE IS BEING PROVIDED "AS IS", WITHOUT ANY EXPRESS OR IMPLIED
 * WARRANTY.  IN PARTICULAR, NEITHER THE AUTHOR NOR LUCENT MAKES ANY
 * REPRESENTATION OR WARRANTY OF ANY KIND CONCERNING THE MERCHANTABILITY
 * OF THIS SOFTWARE OR ITS FITNESS FOR ANY PARTICULAR PURPOSE.
 *
 ***************************************************************/
```

{fmt}

MOSEK uses the formatting library *{fmt}* developed by Victor Zverovich obtained form github/fmt and distributed under the MIT license. The license agreement fot *{fmt}* is shown in Listing 3.3.

Listing 3.3: *{fmt}* license.

```
Copyright (c) 2012 - present, Victor Zverovich

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a copy of this software and associated documentation files (the "Software"),
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IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN
CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.
```

Zstandard

MOSEK uses the *Zstandard* library developed by Facebook obtained from github/zstd. The license agreement for *Zstandard* is shown in Listing 3.4.

Listing 3.4: *Zstandard* license.

```
BSD License

For Zstandard software

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(INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS
SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.
```

OpenSSL

MOSEK uses the LibReSSL library, which is build on *OpenSSL*. OpenSSL is included under the OpenSSL license, Listing 3.5, and the LibReSSL additions are licensed under the ISC license, Listing 3.6.

Listing 3.5: *OpenSSL* license

```
====================================================================
Copyright (c) 1998-2011 The OpenSSL Project.  All rights reserved.

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modification, are permitted provided that the following conditions
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```
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OF THE POSSIBILITY OF SUCH DAMAGE.
====================================================================

This product includes cryptographic software written by Eric Young
(eay@cryptsoft.com).  This product includes software written by Tim
Hudson (tjh@cryptsoft.com).
```

Listing 3.6: *ISC* license

```
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Copyright (c) 2014-2015 Joel Sing <jsing@openbsd.org>
Copyright (c) 2014 Ted Unangst <tedu@openbsd.org>
Copyright (c) 2015-2016 Bob Beck <beck@openbsd.org>
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```

mimalloc

MOSEK uses the *mimalloc* memory allocator library from github/mimalloc. The license agreement for *mimalloc* is shown in Listing 3.7.

Listing 3.7: *mimalloc* license.

```
MIT License

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LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM,
OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE
SOFTWARE.
```

BLASFEO

MOSEK uses the *BLASFEO* linear algebra library developed by Gianluca Frison, obtained from github/blasfeo. The license agreement for *BLASFEO* is shown in Listing 3.8.

Listing 3.8: *blasfeo* license.

```
BLASFEO -- BLAS For Embedded Optimization.
Copyright (C) 2019 by Gianluca Frison.
Developed at IMTEK (University of Freiburg) under the supervision of Moritz Diehl.
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```

oneTBB

MOSEK uses the *oneTBB* parallelization library which is part of *oneAPI* developed by Intel, obtained from github/oneTBB, licensed under the Apache License 2.0. The license agreement for *oneTBB* can be found in https://github.com/oneapi-src/oneTBB/blob/master/LICENSE.txt .

Chapter 4

Quickstart

These are quickstart instructions for users who just want the most basic, working, easy and quick license setup and do not care about the more advanced configuration features.

4.1 I don't have a license file yet

Free licenses

- To obtain a **trial license** go to https://www.mosek.com/products/trial/
- To obtain a **personal academic license** go to https://www.mosek.com/products/academic-licenses/
- To obtain an **institutional academic license** go to https://www.mosek.com/products/academic-licenses/
- If you have a **custom license** go to https://www.mosek.com/license/request/custom/ and enter the code you received.

Commercial licenses

Assuming you purchased a product (https://www.mosek.com/sales/order/) you will obtain a license file from us. For a **floating license** or **server (node-locked) license** you will first have to follow Sec. 6 to determine the `hostname` and `hostid` of the designated machine. Contact us at **license@mosek.com**.

4.2 I have a license file

- Do you have a **trial license** or **personal academic license** or **server (node-locked) license** or **group license** or **custom license**? Go to Sec. 4.3.
- Do you have a **floating license** or **institutional academic license**? Go to Sec. 4.4.

4.3 Local

Put your license file in:

```
$HOME/mosek/mosek.lic             (Linux/OSX)
%USERPROFILE%\mosek\mosek.lic     (Windows)
```

In most cases that is:

```
/home/myusername/mosek/mosek.lic             (Linux)
/Users/myusername/mosek/mosek.lic            (OSX)
C:\Users\myusername\mosek\mosek.lic          (Windows)
```

If that folder does not exist (which it most likely does not if you are using **MOSEK** for the first time), then create it.

Restart any software using **MOSEK** (for example MATLAB, R, etc.) if you updated an existing license.

Need more options or are there issues? See Sec. 8.

4.4 Floating

- Start (or restart) the token server using the instructions in Sec. 7.
- On each user machine where you will run **MOSEK** do exactly the same as in Sec. 4.3.

Are there network issues? See Sec. 7.3.

Chapter 5

License system basics

The **MOSEK** Optimization Suite is licensed software which means a valid license is required. A license is provided by a license file that specifies:

- which features in **MOSEK** have been licensed (an example of a feature is the nonlinear extension `PTON`),
- how many copies of a feature can be used simultaneously,
- an expiration date of each feature,
- for floating licenses, the identifier of the server the license is tied to.

5.1 License Types

Table 5.1: Summary of technical features of license files for various license types.

	Host restricted ?	Requires token server (is floating) ?	Requires hostname and hostid ?	Volume restricted ?	Has expiry?
trial	No	No	No	No	Yes
personal academic	No	No	No	No	Yes
institutional academic	Yes - server	Yes	Yes - server	Yes	Yes
commercial floating	Yes - server	Yes	Yes - server	Yes	No
commercial node-locked	Yes	No	Yes	No	No
commercial group	No	No	No	No	Yes

The license is managed by the FLEXlm (http://www.flexerasoftware.com/) license manager included in **MOSEK**. FLEXlm has two types of licenses:

- **floating**: license tied to a particular computer that acts as a *token server*. **MOSEK** can be used on any computer connected to the token server through the local area network (LAN). In particular **MOSEK** can be used on the token server itself. Setting up a floating license is described in Sec. 7.
- **server** (also known as **node-locked**): license tied to a particular computer that allows unlimited use of the licensed features on that particular machine. Setting up a server license is described in Sec. 8.

Other license types are unrestricted and not tied to any host.

For the licenses which are tied to a host we need the `hostname` and `hostid`, which can be obtained as in Sec. 6.

5.2 License File

A license file is a plain text file that can be opened for inspection using any plain text editor (such as `vim` or `emacs` on Linux, or `notepad` on Windows). It is sometimes useful to inspect the file to check the expiration date, the activated features and computer information.

5.2.1 Floating license file

Listing 5.1: An example of license file for a floating license.

```
#
# MOSEK License File (LIF-1234)
# https://www.mosek.com
#

SERVER hulk f4ed3061a731
USE_SERVER
VENDOR MOSEKLM
FEATURE PTS MOSEKLM 10 permanent 5 VENDOR_STRING=-1*-1*-1*0 \
        BORROW=744 SN=LIF-1234 SIGN="0123 4567 89AB CDEF 0123 4567 89AB \
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB CDEF \
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB" \
        SIGN2="0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB \
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB CDEF \
        0123 4567 89AB CDEF 0123 4567 89AB CDEF"
FEATURE PTON MOSEKLM 10 permanent 5 VENDOR_STRING=-1*-1*-1*0 \
        BORROW=744 SN=LIF-1234 SIGN="0123 4567 89AB CDEF 0123 4567 89AB \
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB CDEF \
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB" \
        SIGN2="0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB \
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB CDEF \
        0123 4567 89AB CDEF 0123 4567 89AB"
```

Listing 5.1 shows an extract of a license file for a floating license. Lines starting from `#` are comments. The syntax is (obligatory fields in `<>` and optional fields in `[]`):

Listing 5.2: Syntax of a floating license file.

```
SERVER <hostname> <hostid> [lmgrd_port]
USE_SERVER
VENDOR MOSEKLM [vendor_options] [port=moseklm_port]
FEATURE <feature_name> MOSEKLM <mosek_version> <expiry_date> <number_of_tokens>␣
↪VENDOR_STRING=-1*-1*-1*0 \
   ... private data ...
FEATURE <feature_name> MOSEKLM <mosek_version> <expiry_date> <number_of_tokens>␣
↪VENDOR_STRING=-1*-1*-1*0 \
   ... private data ...
```

There is one feature entry per each feature the license file supports (PTS, PTON or others).

5.2.2 Server (node-locked) or unrestricted license file

Listing 5.3: An example of license file for a server (node-locked) license.

```
#
# MOSEK License File (LIF-1234)
# https://www.mosek.com
#

VENDOR MOSEKLM
FEATURE PTS MOSEKLM 10 permanent uncounted VENDOR_STRING=-1*-1*-1*0 \
        HOSTID=f4ed3061a731 BORROW=744 SN=LIF-1234 TS_OK SIGN="0123 \
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB CDEF \
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB CDEF \
        0123 4567 89AB CDEF 0123" SIGN2="0123 4567 89AB CDEF 0123 4567\
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB CDEF \
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB CDEF"
FEATURE PTON MOSEKLM 10 permanent uncounted VENDOR_STRING=-1*-1*-1*0 \
        HOSTID=f4ed3061a731 BORROW=744 SN=LIF-1234 TS_OK SIGN="0123 \
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB CDEF \
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB CDEF \
        0123 4567 89AB CDEF 0123" SIGN2="0123 4567 89AB CDEF 0123 4567\
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB CDEF \
        0123 4567 89AB CDEF 0123 4567 89AB CDEF 0123 4567 89AB CDEF"
```

Listing 5.3 shows an extract of a license file for a floating license. In case of unrestricted (trial, personal academic) licenses the `<hostid>` will be `ANY`. Lines starting from `#` are comments. The syntax is (obligatory fields in `<>` and optional fields in `[]`):

Listing 5.4: Syntax of a node-locked license file.

```
VENDOR MOSEKLM
FEATURE <feature_name> MOSEKLM <mosek_version> <expiry_date> uncounted VENDOR_STRING=-
↪1*-1*-1*0 \
   HOSTID=<hostid>    ... private data ...
FEATURE <feature_name> MOSEKLM <mosek_version> <expiry_date> uncounted VENDOR_STRING=-
↪1*-1*-1*0 \
   HOSTID=<hostid>    ... private data ...
```

There is one feature entry per each feature the license file supports (PTS, PTON or others).

5.3 Versions

- **MOSEK** version 11 requires a license file with version at least 11.
- The license file for **MOSEK** version 11 will support all **MOSEK** clients with versions less than or equal to 11.
- Only the major version matters.
- For floating licenses, use the token server from the same, or newer **MOSEK** distribution as the one you are using in the client. Token server binaries should be as new as the newest client contacting the token server. When the FLEXlm version used by the token server falls too far behind the version used in the **MOSEK** client, they will no longer be able to communicate.
- If you are using your own `lmgrd` for floating licenses then its version must be at least as new as that used by the newest **MOSEK** client contacting the server.
- The FLEXlm version used by **MOSEK** can be found by running `mosek -f` in the command-line tool. The history of recent FLEXlm upgrades in **MOSEK** is as follows:

Mosek version	FlexLM version
from 10.2.0	11.19.6
from 10.0.0	11.18.3
from 9.3.0	11.18.1
from 9.1.5	11.16.4
from 8.0	11.14.1

5.4 Editing

The user may edit the sections `lmgrd_port`, `port=moseklm_port` and `vendor_options` in the license files. Other edits may invalidate the license file. Good reasons for such edits exist only for floating license files and include:

- changing/fixing the port numbers used for floating license checkouts. See Sec. 7.3.
- attaching an options file, for instance to reserve a number of floating licenses for specific users or groups. See Sec. 9.1

Otherwise it should not be necessary to edit the file.

Chapter 6

Hostname and Hostid

The `hostname` and `hostid` are the two basic computer identifiers used in some of **MOSEK** license files.

- `hostname` is just the standard host name of the machine.
- `hostid` is, in most cases, the MAC address of a network card, or of one of the network cards. It is a sequence of 12 hexadecimal digits. There is no need for the card to have an active connection.

Both identifiers can be obtained in various ways, either with **MOSEK** or standard tools available in the operating system. We outline these below.

Important: A modern machine will often have many network interfaces, some physical (hardware network devices) and possibly also some virtual. The licensing software will detect all of them and present them as a list in no particular order, but we only need ONE of these MAC addreses as a `hostid` the license will be bound to.

In such cases please indicate which of the list of MAC addresses is the preferred choice for `hostid`. It is recommended to choose one that corresponds to one of permanent physical network cards. That assures the interface will not easily disappear, which would render the license file invalid. You can explore the network devices in your system settings or use the tools described in Sec. 6.3 to match MACs to actual interfaces.

6.1 Using MOSEK

6.1.1 Command line

In the directory with **MOSEK** binaries (`<MSKHOME>/mosek/11.2/tools/platform/<PLATFORM>/bin/`) run the command

```
mosek -f
```

It will produce output similar to

```
MOSEK Version 10.0.34 (Build date: 2023-1-6 13:40:00)
Copyright (c) MOSEK ApS, Denmark WWW: mosek.com
Platform: Linux/64-X86

FlexLM
 Version                 : 11.18
 Hostname                : hulk
 Host ID                 : "f4ed3061a731 00aa720b7fa"
 License path            : /home/username/mosek/mosek.lic

Operating system variables
 LD_LIBRARY_PATH         :
```

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```
*** No input file specfied. No optimization is performed.

Return code - 0  [MSK_RES_OK]
```

Both `hostname` and a list of possible `hostid` are present in the output.

6.1.2 From an API

If you only installed **MOSEK** as a client package (for example via `pip`, or NuGet) and do not have the full distribution then you can get the same output by calling the `echointro` method of the Optimizer API environment object `Env`. Note, however, that for floating licenses you will still have to download the full **MOSEK** distribution package to obtain the license server binaries.

Here is an example of this in Python:

```
import mosek, sys

env = mosek.Env()
env.set_Stream(mosek.streamtype.log, sys.stdout.write)
env.echointro(1)
```

6.2 Using FLEXlm

6.2.1 FLEXlm command line

In the directory with **MOSEK** binaries (`<MSKHOME>/mosek/11.2/tools/platform/<PLATFORM>/bin/`) run the command

```
./lmutil lmhostid                    (Linux/OSX)
lmutil lmhostid                      (Windows)
```

This will give you the list of possible `hostid` similar to:

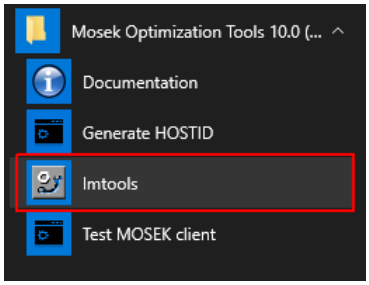
```
lmutil - Copyright (c) 1989-2021 Flexera. All Rights Reserved.
The FlexNet host ID of this machine is ""f4ed3061a731 00aa720b7fa""
Only use ONE from the list of hostids.
```

The `hostname` is obtained simply by running

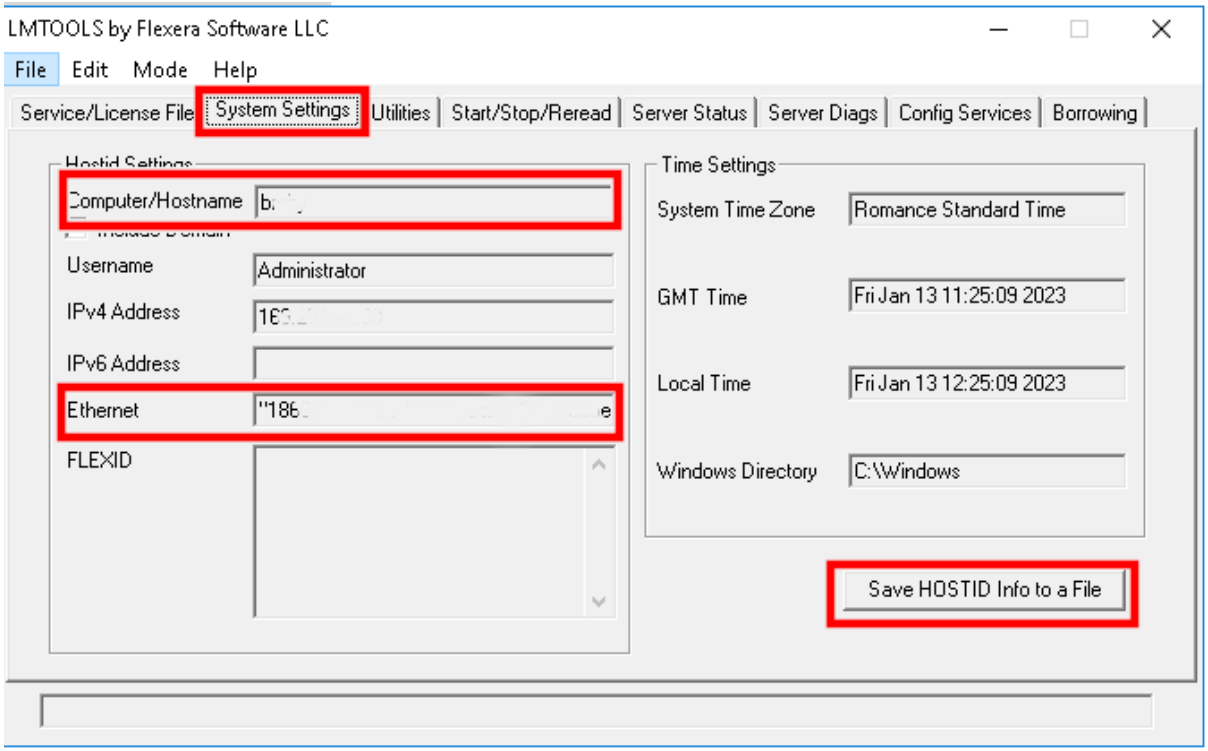
```
hostname
```

6.2.2 LMTOOLS graphical utility (Windows)

Start the **LMTOOLS** graphical utility, either from the **MOSEK** Start menu or from `<MSKHOME>/mosek/11.2/tools/platform/<PLATFORM>/bin/`.



Navigate to the tab **System settings**. The `hostname` and list of `hostid` are shown in the **Hostid Settings** panel under, respectively, *Computer/Hostname* and *Ethernet*. You can also choose to save all information to a file with the button in the bottom-right corner.



6.3 Using the OS tools

6.3.1 Command line

Start the terminal or command prompt. On all platforms the `hostname` can be obtained by running the command

```
hostname
```

To obtain the `hostid` generate a list of network interfaces by running one of the following commands. Some administrator permissions may be required.

```
ifconfig                                                    (Linux/OSX)
ip addr                                                     (Linux)
netstat -i                                                  (Linux/OSX)
wmic nic get AdapterType, Name, Installed, MACAddress       (Windows)
ipconfig /all                                               (Windows)
getmac /v                                                   (Windows)
```

In each case you will obtain a list of network interfaces with more or less detailed descriptions. Identify one corresponding to the device you want to bind to and use its MAC address as `hostid` (it will usually be displayed in the format `01:23:45:67:90:ab` or similar and referred to as `MAC`, `ether`, `Ethernet` or similar). If in doubt save the output of the command to a file and send us the file.

Important: **Linux:** DO **NOT** use the command line tool `hostid`. It generates a different identifier with 8 hexadecimal digits which we cannot use.

6.3.2 System settings

In the system settings find the section with network devices, find a network card and browse through its details to find the MAC address. We omit the details as they vary between operating systems.

Chapter 7

Floating license setup

Overview

A **floating license** is tied to a particular computer acting as a *token server*. A token server is a *service* on Windows and a *daemon* on UNIX that serves license tokens to **MOSEK** client programs over the LAN.

You may think of the token server as a computer with a bag of license tokens. Whenever a client computer starts using **MOSEK**, a license token is requested from the token server, and when **MOSEK** completes it sends back the license token to the token server. The following diagram Fig. 7.1 conveys the overall idea.

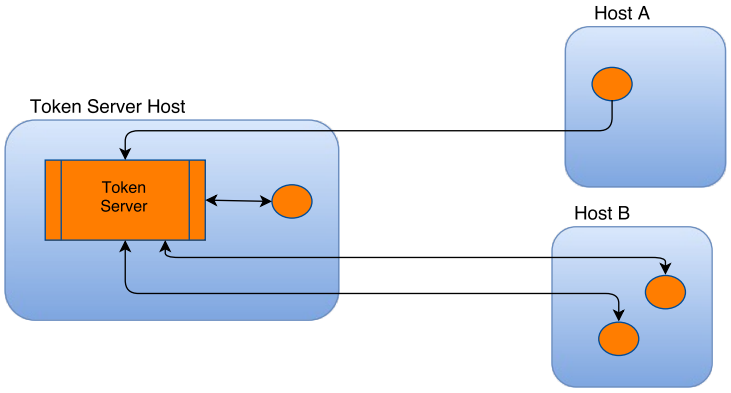


Fig. 7.1: General floating license scheme: any **MOSEK** instances that can connect to the token server can get a valid license.

This implies that you cannot use more license tokens than are available at any given point in time. Moreover, **MOSEK** can be used on any computer connected to the token server through the local area network. In particular **MOSEK** can also be used on the token server itself.

Note that

- a floating license file starts with the word `SERVER`. The format is described in Sec. 5.2.1. Installing a license file without a `SERVER` line with a token server is *NOT* needed and is *NOT* possible.
- The token server consists of two daemons: `lmgrd` - the token server daemon running as a service, and `MOSEKLM` - a vendor daemon started by `lmgrd` specifically for handling **MOSEK** licenses.
- at most one instance of `lmgrd` can be running on any given machine.

Choosing ports

The default floating licenses files issued by **MOSEK** will use the following ports for the token server to listen on:

- `lmgrd`: port 27007
- `MOSEKLM`: not defined, will be assigned dynamically during startup.

If you are using a firewall then both of these ports must be open for inbound connections. Therefore in restricted environments it is **strongly recommended** to choose your own port numbers and ensure their accessibility; this applies especially to the second `MOSEKLM` vendor port, as otherwise it will change after each restart of the token server.

To achieve this, edit the license file as follows:

```
SERVER my_server 123456789ABC 27007
USE_SERVER
VENDOR MOSEKLM port=3084
```

using your chosen port numbers. The example above will assign port 27007 to `lmgrd` and port 3084 to `MOSEKLM`. Start the token server with your edited license file.

For more information and troubleshooting tips see Sec. 7.3.

Installation

- Sec. 7.1 - installing the token server as a service on Windows using the graphical tool `lmtools`.
- Sec. 7.2 - starting the token server on Linux and macOS using the command-line tool `lmgrd`. The same instructions can also be used for a manual startup on Windows.

Additional troubleshooting

- Sec. 7.3 - more information about ports and firewalls.
- Sec. 11.2 - licensing FAQ with solutions to all known floating license issues.

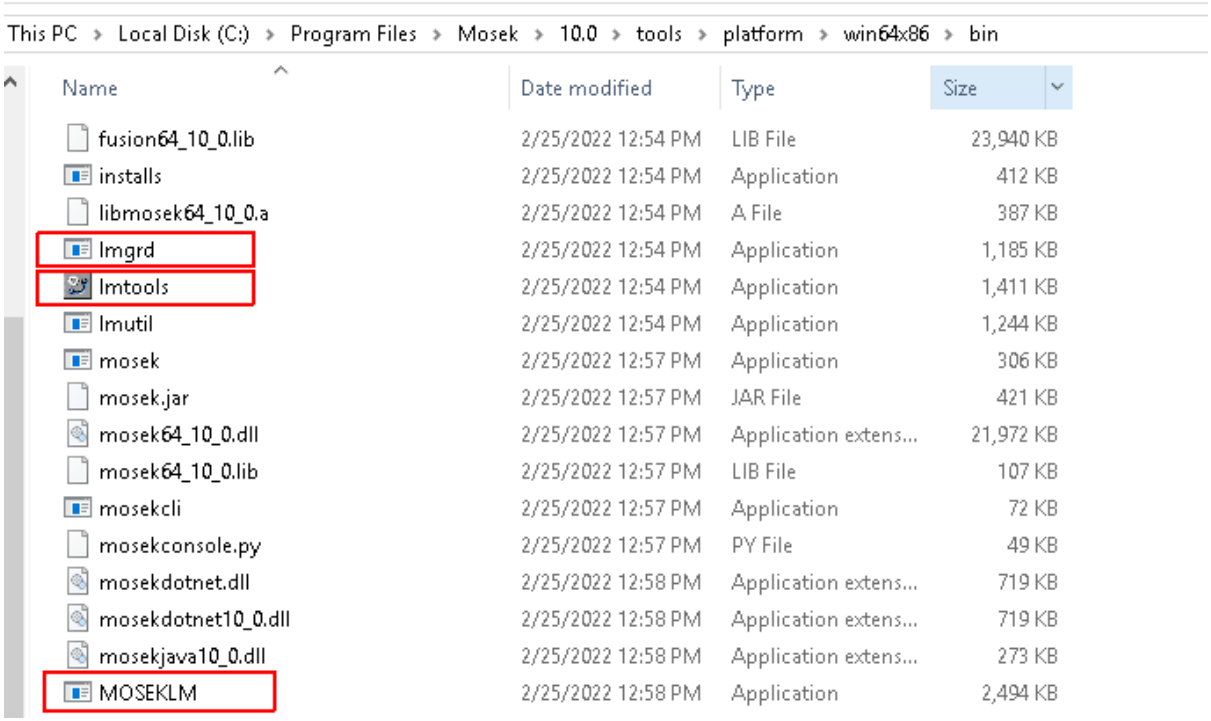
7.1 Windows: Token server setup

7.1.1 Prerequisites and locating the files

- Make sure you have **administrative privileges**.
- Locate the `bin` folder of your **MOSEK** installation, that is

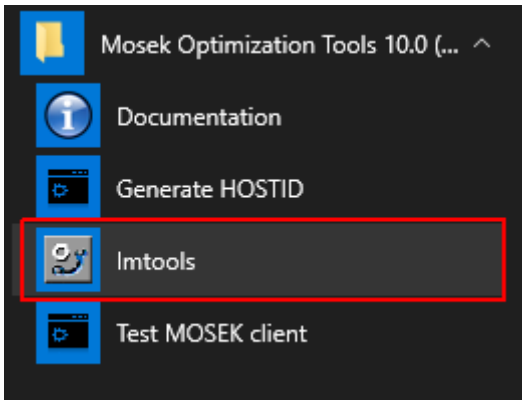
  `<MSKHOME>\mosek\11.2\tools\platform\<PLATFORM>\bin\`

  where `<PLATFORM>` is the platform you are working on. That folder contains the files `lmgrd.exe` and `MOSEKLM.exe` required by the license system.
- Download the license file and store it on the local drive.
- Decide if you want to choose your own port numbers for the service instead of using defaults. If yes, edit the license file as in Sec. 7.

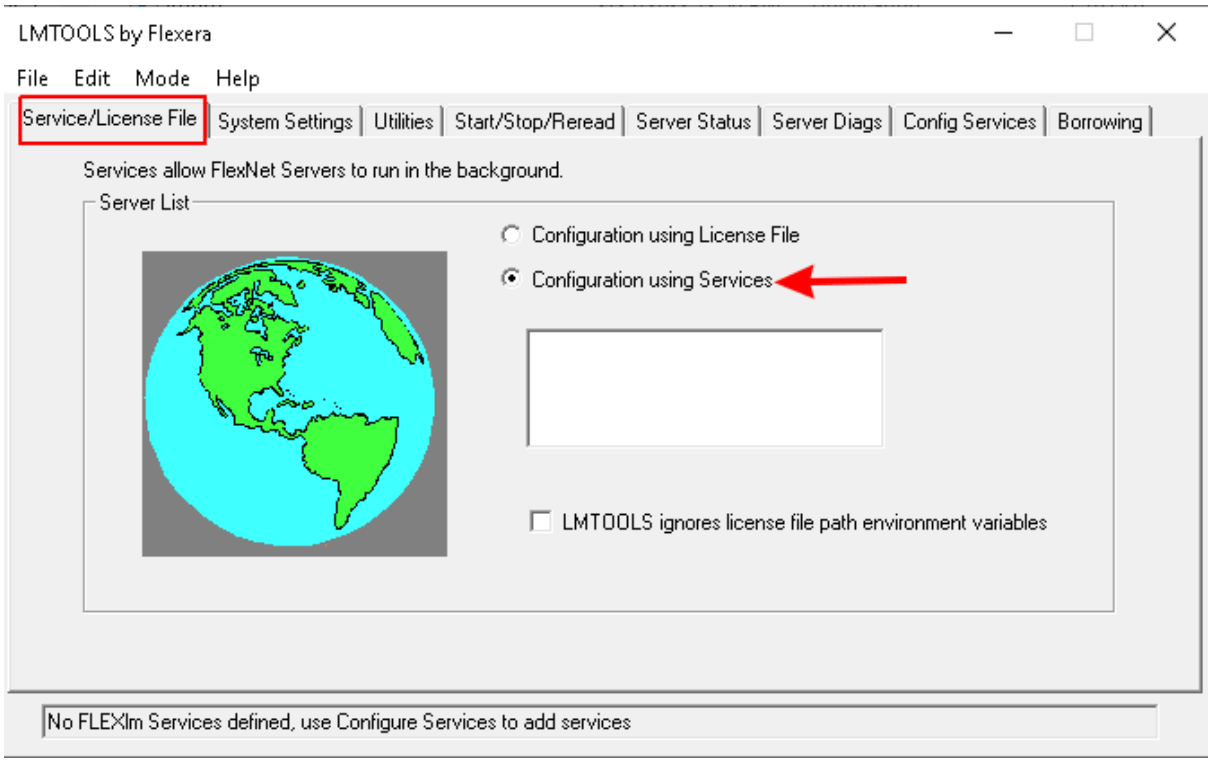


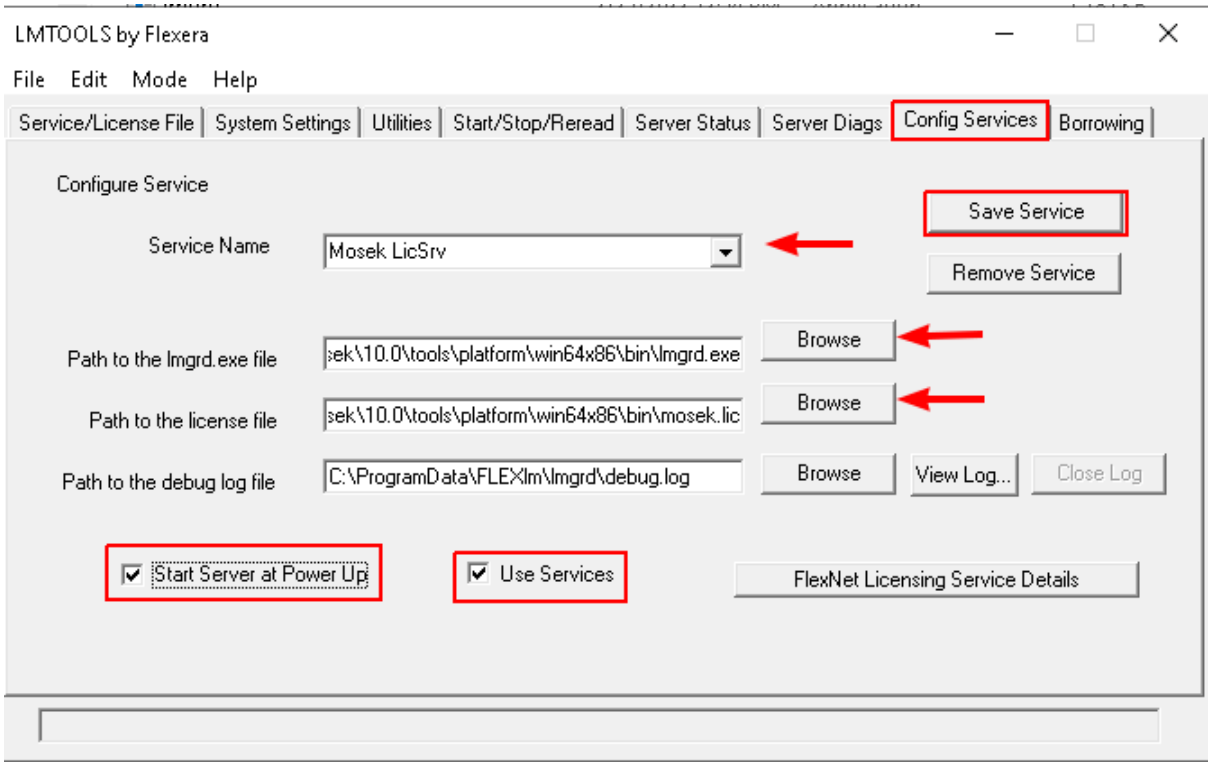
7.1.2 Installation of the service

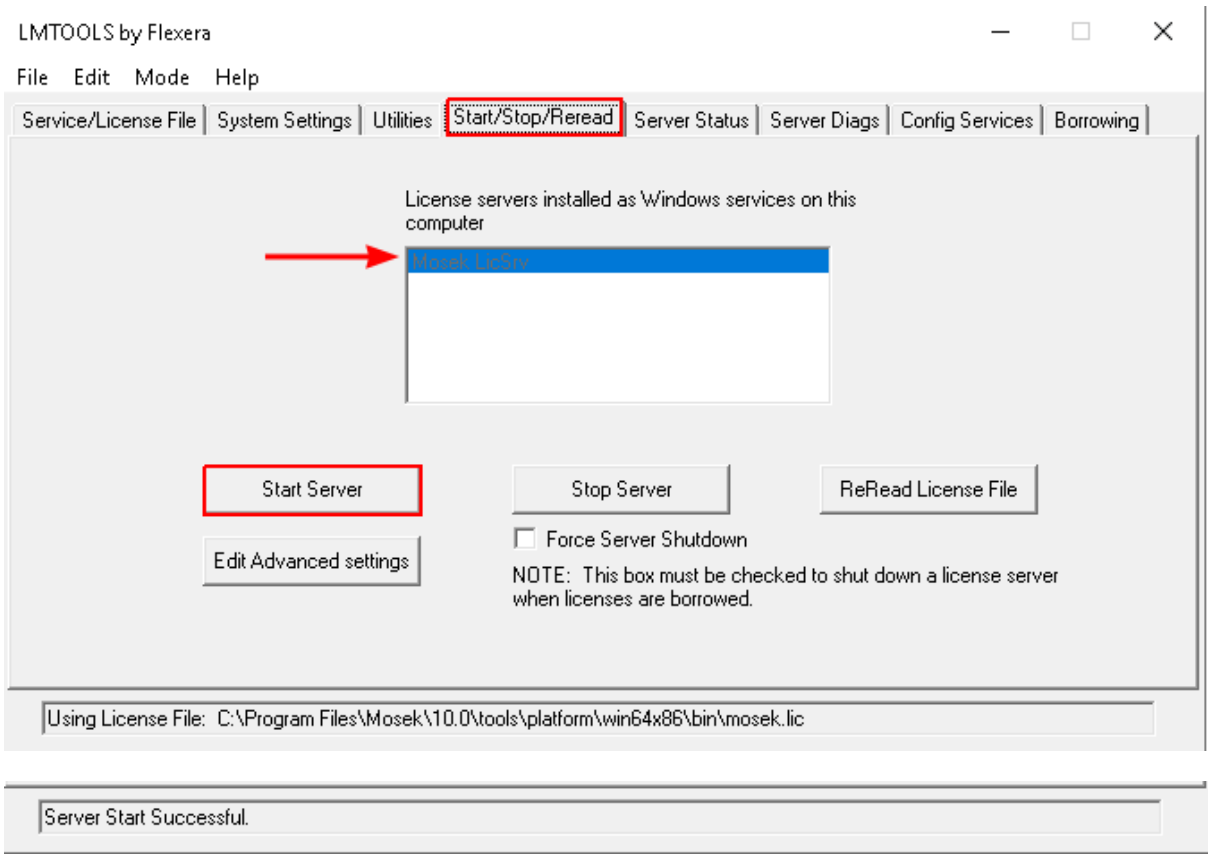
- Locate and start the program `lmtools`. You can find it in the same `bin` folder as above and also in the **MOSEK** Start Menu if **MOSEK** was installed with the MSI installer.



- In the **Service/License file** TAB select **Configuration using Services**.
- Go to the **Config Services** TAB.
  - In *Service name* input your chosen name for the service.
  - In *Path to the lmgrd.exe file* navigate to the previously located `lmgrd.exe` file in the `bin` folder of the **MOSEK** installation (or another location if you moved it).
  - In *Path to the license file* navigate to the location of your **MOSEK** license file.
  - Tick the box *Use Services* and then tick the box *Start server at Power Up*.
  - Click *Save Service* and confirm that you want to save the service.
- Go to the **Start/Stop/Reread** TAB.
  - Choose your service from the list and click *Start Server*.
  - You should see the message *Server start successful* in the status line at the bottom.


LMTOOLS by Flexera
File Edit Mode Help
Service/License File
System Settings
Utilities
Start/Stop/Reread
Server Status
Server Diags
Config Services
Borrowing
Services allow FlexNet Servers to run in the background.
Server List
Configuration using License File
Configuration using Services
LMTOOLS ignores license file path environment variables
No FLEXlm Services defined, use Configure Services to add services


LMTOOLS by Flexera
File Edit Mode Help
Service/License File
System Settings
Utilities
Start/Stop/Reread
Server Status
Server Diags
Config Services
Borrowing
Configure Service
Service Name
Mosek LicSrv
Save Service
Remove Service
Path to the lmgrd.exe file
sek\10.0\tools\platform\win64x86\bin\lmgrd.exe
Browse
Path to the license file
sek\10.0\tools\platform\win64x86\bin\mosek.lic
Browse
Path to the debug log file
C:\ProgramData\FLEXlm\lmgrd\debug.log
Browse
View Log...
Close Log
Start Server at Power Up
Use Services
FlexNet Licensing Service Details



7.1.3 Checking that startup succeeded

To get a quick overview of the server start go to the **Config Services** TAB and click *View log*. A log file from a successful start should look similarly to:

```
9:49:15 (lmgrd) -----------------------------------------------
9:49:15 (lmgrd)   Please Note:
9:49:15 (lmgrd)
9:49:15 (lmgrd)   This log is intended for debug purposes only.

.....

9:49:15 (lmgrd)
9:49:15 (lmgrd) -----------------------------------------------
9:49:15 (lmgrd)
9:49:15 (lmgrd)
9:49:15 (lmgrd) Server's System Date and Time: Mon Feb 28 2022 09:49:15 CET
9:49:15 (lmgrd) SLOG: Summary LOG statistics is enabled.
9:49:15 (lmgrd) FlexNet Licensing (v11.18.3.0 build 283040 x64_lsb) started on␣
↪hostname (linux) (2/28/2022)
9:49:15 (lmgrd) Copyright (c) 1988-2021 Flexera. All Rights Reserved.
9:49:15 (lmgrd) World Wide Web:  http://www.flexerasoftware.com
9:49:15 (lmgrd) License file(s): /home/username/mosek/mosek-floating.lic
9:49:15 (lmgrd) lmgrd tcp-port 27007
9:49:15 (lmgrd) (@lmgrd-SLOG@) ===============================================
9:49:15 (lmgrd) (@lmgrd-SLOG@) === LMGRD ===
9:49:15 (lmgrd) (@lmgrd-SLOG@) Start-Date: Mon Feb 28 2022 09:49:15 CET
9:49:15 (lmgrd) (@lmgrd-SLOG@) PID: 2147425
9:49:15 (lmgrd) (@lmgrd-SLOG@) LMGRD Version: v11.18.3.0 build 283040 x64_lsb ( build␣
↪283040 (ipv6))
```

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```
9:49:15 (lmgrd) (@lmgrd-SLOG@)
9:49:15 (lmgrd) (@lmgrd-SLOG@) === Network Info ===
9:49:15 (lmgrd) (@lmgrd-SLOG@) Listening port: 27007
9:49:15 (lmgrd) (@lmgrd-SLOG@)
9:49:15 (lmgrd) (@lmgrd-SLOG@) === Startup Info ===
9:49:15 (lmgrd) (@lmgrd-SLOG@) Server Configuration: Single Server
9:49:15 (lmgrd) (@lmgrd-SLOG@) Command-line options used at LS startup: -c /home/
↪username/mosek/mosek-floating.lic
9:49:15 (lmgrd) (@lmgrd-SLOG@) License file(s) used:  /home/username/mosek/mosek-
↪floating.lic
9:49:15 (lmgrd) (@lmgrd-SLOG@) ================================================
9:49:15 (lmgrd) Starting vendor daemons ...
9:49:15 (lmgrd) Started MOSEKLM (internet tcp_port 36867 pid 2147427)
9:49:15 (MOSEKLM) FlexNet Licensing version v11.18.3.0 build 283040 x64_lsb
9:49:15 (MOSEKLM) SLOG: Summary LOG statistics is enabled.
9:49:15 (MOSEKLM) SLOG: FNPLS-INTERNAL-CKPT1
9:49:15 (MOSEKLM) SLOG: VM Status: 0
9:49:15 (MOSEKLM) SLOG: FNPLS-INTERNAL-CKPT5
9:49:15 (MOSEKLM) SLOG: TPM Status: 0
9:49:15 (MOSEKLM) SLOG: FNPLS-INTERNAL-CKPT6
9:49:15 (MOSEKLM) Server started on hostname for:        PTS
9:49:15 (MOSEKLM) PTON
9:49:15 (MOSEKLM) EXTERNAL FILTERS are OFF
9:49:15 (lmgrd) MOSEKLM using TCP-port 36867
9:49:15 (MOSEKLM) SLOG: Statistics Log Frequency is 240 minute(s).
9:49:15 (MOSEKLM) SLOG: TS update poll interval is 600 seconds.
9:49:15 (MOSEKLM) SLOG: Activation borrow reclaim percentage is 0.
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) ================================================
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) === Vendor Daemon ===
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Vendor daemon: MOSEKLM
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Start-Date: Mon Feb 28 2022 09:49:15 CET
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) PID: 2147427
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) VD Version: v11.18.3.0 build 283040 x64_lsb (␣
↪build 283040 (ipv6))
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@)
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) === Startup/Restart Info ===
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Options file used: None
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Is vendor daemon a CVD: No
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Is FlexNet Licensing Service installed and␣
↪compatible: No
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) FlexNet Licensing Service Version: -NA-
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Is TS accessed: No
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) TS access time: -NA-
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Number of VD restarts since LS startup: 0
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@)
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) === Network Info ===
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Listening port: 36867
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Daemon select timeout (in seconds): 1
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@)
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) === Host Info ===
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Host used in license file: hostname
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) HostID node-locked in license file: b47acd81a33c
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) HostID of the License Server: "b47acd81a33c␣
↪b47acd81a33d"
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Running on Hypervisor: Not determined - treat as␣
↪Physical
```

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```
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) ===============================================
9:49:15 (MOSEKLM) TCP_NODELAY NOT enabled
9:49:15 (MOSEKLM) Listener Thread: running
9:49:15 (MOSEKLM) Starting diagnostics port listener thread (DPLT)
9:49:15 (MOSEKLM) Starting diagnostics output thread (DRQT)
```

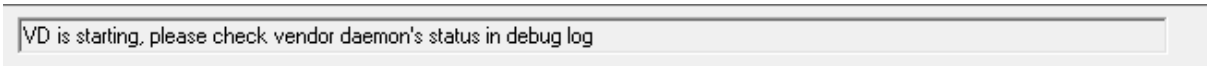
In particular, the major information contained in the file is:

- the port `lmgrd` is running on (in this case `27007`, the default port used by **MOSEK**),
- the port `MOSEKLM` is running on (in this case `36867`, by default a value assigned dynamically at startup),
- the path to the license file that was used,
- the hostname and hostid of the machine,
- the licensed part IDs (in this case `PTS` and `PTON`)

If the log file indicates errors consult the next rubric and Sec. 11.2.

7.1.4 Troubleshooting possible permission issues.

Here we mention one Windows-specific permission-related error which can prevent the startup. It manifests as follows: the startup takes quite long, ends in a message such as:



and the log file looks similarly to:

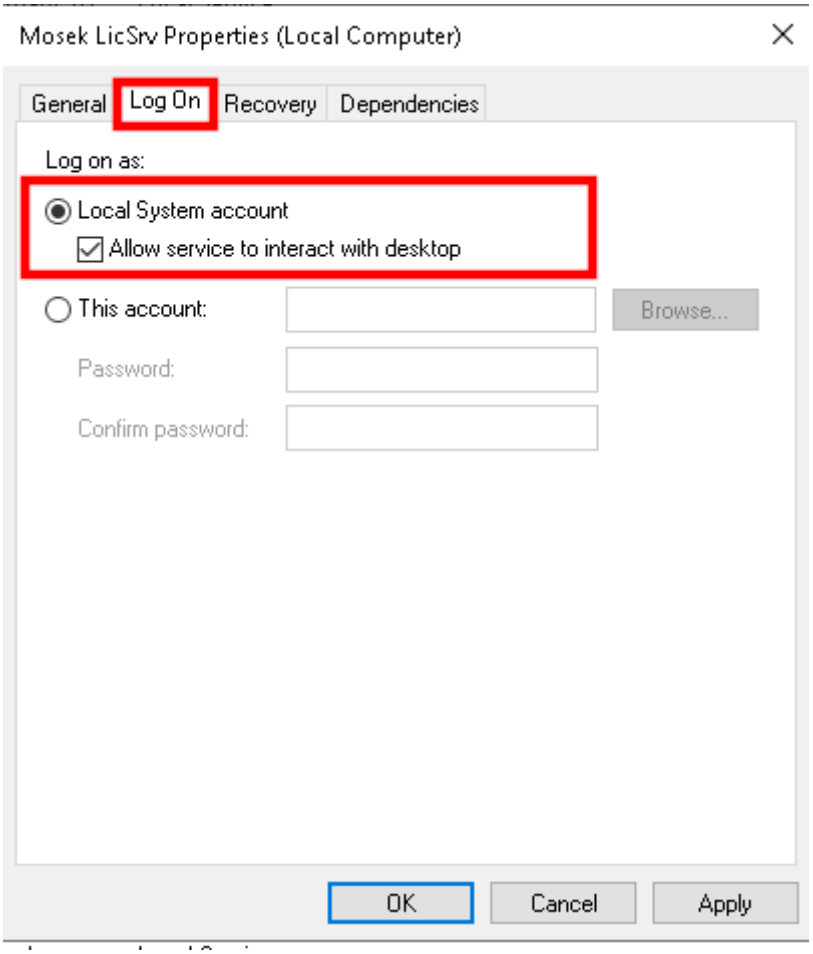
```
6:02:10 (lmgrd) license manager: can't initialize:Cannot find license file.
6:02:10 (lmgrd) The license files (or license server system network addresses)␣
↪attempted are
6:02:10 (lmgrd) listed below.  Use LM_LICENSE_FILE to use a different license file,
6:02:10 (lmgrd) or contact your software provider for a license file.
6:02:10 (lmgrd) Filename: "C:\flexlm\license.dat"
6:02:10 (lmgrd) License Path: "C:\flexlm\license.dat"
6:02:10 (lmgrd) FlexNet Licensing error:-1,359
6:02:10 (lmgrd) System Error:2 No such file or directory
6:02:10 (lmgrd) Using license file "C:\flexlm\license.dat"
```

Then you may be experiencing an issue with service permissions.

- **Recommended solution.** Open the *Windows Administrative Tools*, navigate to *Services (Local)* and find the service with the name you just created. Open the configuration for that service and in the **Log On** TAB choose *Local System account* and tick the checkbox for *Allow service to interact with desktop*:

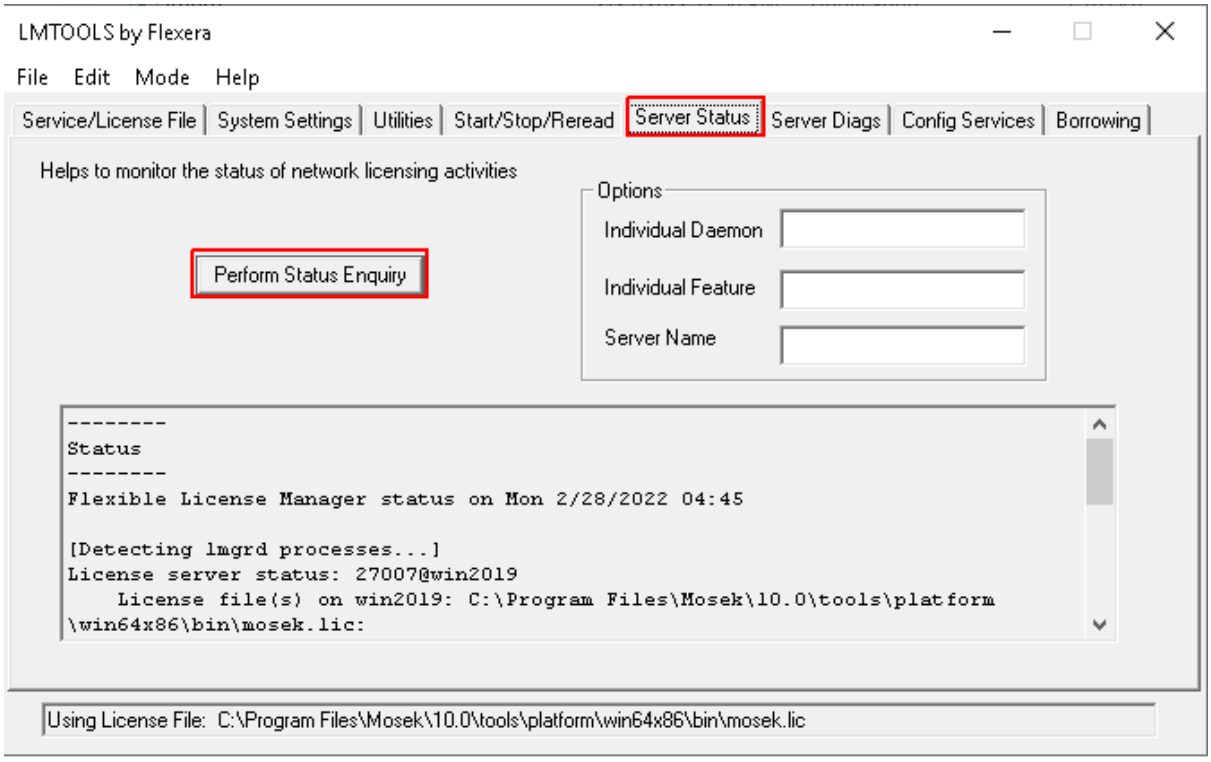
  Save the new configuration and start the service again in the **Start/Stop/Reread** TAB of `lmtools`.

- **Alternative solution.** Move the license file and the files `lmgrd.exe` and `MOSEKLM.exe` all three to the same new folder. Repeat the configuration, this time pointing `lmtools` to the paths in this common location.


Mosek LicSrv Properties (Local Computer)
General
Log On
Recovery
Dependencies
Log on as:
Local System account
Allow service to interact with desktop
This account:
Browse...
Password:
Confirm password:
OK
Cancel
Apply

7.1.5 Testing the Token Server

In order to verify that the token server is running, go to the **Server Status** TAB and click *Perform Status Enquiry*.



The result for a successfully running token server should be similar to the one below:

```
lmutil - Copyright (c) 1989-2021 Flexera. All Rights Reserved.
Flexible License Manager status on Mon 2/28/2022 10:09

License server status: 27007@hostname
    License file(s) on hostname: /home/username/mosek/mosek-floating.lic:

    hostname: license server UP (MASTER) v11.18.3

Vendor daemon status (on hostname):

   MOSEKLM: UP v11.18.3
Feature usage info:

Users of PTS:  (Total of 5 licenses issued;  Total of 0 licenses in use)

Users of PTON:  (Total of 5 licenses issued;  Total of 0 licenses in use)
```

7.1.6 Troubleshooting

If the server won't start, or the client can't check out the license first check Sec. 11.2. It covers most typical issues. Always consult the log file of the server.

If that doesn't help please contact **MOSEK** support at support@mosek.com. Please include the client error messages and the server log file. See Sec. 11.4.

7.1.7 Administration of the token server

We briefly describe how to stop, disable, restart the token server, update the license file and upgrade the server. A full administrator's manual with all options and details can be found in License Administration Guide.

If the token server was started using `lmtools` then all operations related to stopping/restarting/updating/upgrading can be carried out through `lmtools`. Start `lmtools` from the `bin` folder of the **MOSEK** installation or from the **MOSEK** Start Menu.

Replacing the license file

- If you are changing to a new license file, go to the **Config services** TAB in `lmtools`, choose your license server from the list in *Service Name*, update the path in *Path to the license file* and click *Save Service*. This will automatically restart the license server using the new file.
- If you are overwriting the current file, then go to the **Start/Stop/Reread** TAB in `lmtools`, choose your license server from the list, and click *ReRead License File*.

Check if the restart succeeded by performing a status enquiry as in Sec. 7.1.5 and if necessary use the troubleshooting instructions as for the installation process.

Stopping

To stop the server go to the **Start/Stop/Reread** TAB in `lmtools`, choose your license server from the list, and click *Stop Server*.

Starting

To start a previously stopped server go to the **Start/Stop/Reread** TAB in `lmtools`, choose your license server from the list, and click *Start Server*.

Removing the service

To remove the service from the system first stop the server if not already stopped (see above). Then go to the **Config services** TAB in `lmtools`, choose your license server from the list in *Service Name* and click *Remove Service*.

Upgrading the token server

To upgrade the token server to a new version first remove the existing service (see above) and then repeat the installation process Sec. 7.1 using another version of `lmtools` (for instance from another installation of **MOSEK**).

7.2 Linux, macOS: Token server setup

Below is a step-by-step guide to starting the token server on Linux and macOS. The same instructions can also be applied to start the token server on Windows from the command line, although for most Windows users the approach from Sec. 7.1, which installs the token server as a service, is preferable.

7.2.1 Prerequisites and locating the files

- Make sure you have appropriate administrative privileges if needed.
- Locate the `bin` folder of your **MOSEK** installation, that is

  `<MSKHOME>/mosek/11.2/tools/platform/<PLATFORM>/bin/`

  where `<PLATFORM>` is the platform you are working on. That folder contains the files `lmgrd` and `MOSEKLM` required by the license system.
- Download the license file and store it on the local drive.
- Decide if you want to choose your own port numbers for the service instead of using defaults. If yes, edit the license file as in Sec. 7.

7.2.2 Starting the token server

To start the token server open the terminal, go to the `bin` folder of the **MOSEK** installation mentioned above and run:

```
./lmgrd -c PATH_TO_LICENSE -l lmgrd.log
```

where `PATH_TO_LICENSE` is the path to your license file. The token server will save a log file in the location given by the `-l` command line parameter.

7.2.3 Checking that startup succeeded

If the token server was started successfully the `lmgrd.log` file will look similar to this

```
9:49:15 (lmgrd) -----------------------------------------------
9:49:15 (lmgrd)   Please Note:
9:49:15 (lmgrd)
9:49:15 (lmgrd)   This log is intended for debug purposes only.

.....

9:49:15 (lmgrd)
9:49:15 (lmgrd) -----------------------------------------------
9:49:15 (lmgrd)
9:49:15 (lmgrd)
9:49:15 (lmgrd) Server's System Date and Time: Mon Feb 28 2022 09:49:15 CET
9:49:15 (lmgrd) SLOG: Summary LOG statistics is enabled.
9:49:15 (lmgrd) FlexNet Licensing (v11.18.3.0 build 283040 x64_lsb) started on␣
↪hostname (linux) (2/28/2022)
9:49:15 (lmgrd) Copyright (c) 1988-2021 Flexera. All Rights Reserved.
9:49:15 (lmgrd) World Wide Web:  http://www.flexerasoftware.com
9:49:15 (lmgrd) License file(s): /home/username/mosek/mosek-floating.lic
9:49:15 (lmgrd) lmgrd tcp-port 27007
9:49:15 (lmgrd) (@lmgrd-SLOG@) ===============================================
9:49:15 (lmgrd) (@lmgrd-SLOG@) === LMGRD ===
9:49:15 (lmgrd) (@lmgrd-SLOG@) Start-Date: Mon Feb 28 2022 09:49:15 CET
9:49:15 (lmgrd) (@lmgrd-SLOG@) PID: 2147425
9:49:15 (lmgrd) (@lmgrd-SLOG@) LMGRD Version: v11.18.3.0 build 283040 x64_lsb ( build␣
↪283040 (ipv6))
9:49:15 (lmgrd) (@lmgrd-SLOG@)
9:49:15 (lmgrd) (@lmgrd-SLOG@) === Network Info ===
9:49:15 (lmgrd) (@lmgrd-SLOG@) Listening port: 27007
9:49:15 (lmgrd) (@lmgrd-SLOG@)
9:49:15 (lmgrd) (@lmgrd-SLOG@) === Startup Info ===
```

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```
9:49:15 (lmgrd) (@lmgrd-SLOG@) Server Configuration: Single Server
9:49:15 (lmgrd) (@lmgrd-SLOG@) Command-line options used at LS startup: -c /home/
↪username/mosek/mosek-floating.lic
9:49:15 (lmgrd) (@lmgrd-SLOG@) License file(s) used:  /home/username/mosek/mosek-
↪floating.lic
9:49:15 (lmgrd) (@lmgrd-SLOG@) ===============================================
9:49:15 (lmgrd) Starting vendor daemons ...
9:49:15 (lmgrd) Started MOSEKLM (internet tcp_port 36867 pid 2147427)
9:49:15 (MOSEKLM) FlexNet Licensing version v11.18.3.0 build 283040 x64_lsb
9:49:15 (MOSEKLM) SLOG: Summary LOG statistics is enabled.
9:49:15 (MOSEKLM) SLOG: FNPLS-INTERNAL-CKPT1
9:49:15 (MOSEKLM) SLOG: VM Status: 0
9:49:15 (MOSEKLM) SLOG: FNPLS-INTERNAL-CKPT5
9:49:15 (MOSEKLM) SLOG: TPM Status: 0
9:49:15 (MOSEKLM) SLOG: FNPLS-INTERNAL-CKPT6
9:49:15 (MOSEKLM) Server started on hostname for:        PTS
9:49:15 (MOSEKLM) PTON
9:49:15 (MOSEKLM) EXTERNAL FILTERS are OFF
9:49:15 (lmgrd) MOSEKLM using TCP-port 36867
9:49:15 (MOSEKLM) SLOG: Statistics Log Frequency is 240 minute(s).
9:49:15 (MOSEKLM) SLOG: TS update poll interval is 600 seconds.
9:49:15 (MOSEKLM) SLOG: Activation borrow reclaim percentage is 0.
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) ============================================
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) === Vendor Daemon ===
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Vendor daemon: MOSEKLM
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Start-Date: Mon Feb 28 2022 09:49:15 CET
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) PID: 2147427
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) VD Version: v11.18.3.0 build 283040 x64_lsb (␣
↪build 283040 (ipv6))
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@)
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) === Startup/Restart Info ===
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Options file used: None
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Is vendor daemon a CVD: No
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Is FlexNet Licensing Service installed and␣
↪compatible: No
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) FlexNet Licensing Service Version: -NA-
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Is TS accessed: No
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) TS access time: -NA-
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Number of VD restarts since LS startup: 0
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@)
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) === Network Info ===
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Listening port: 36867
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Daemon select timeout (in seconds): 1
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@)
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) === Host Info ===
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Host used in license file: hostname
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) HostID node-locked in license file: b47acd81a33c
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) HostID of the License Server: "b47acd81a33c␣
↪b47acd81a33d"
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Running on Hypervisor: Not determined - treat as␣
↪Physical
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) ============================================
9:49:15 (MOSEKLM) TCP_NODELAY NOT enabled
9:49:15 (MOSEKLM) Listener Thread: running
9:49:15 (MOSEKLM) Starting diagnostics port listener thread (DPLT)
9:49:15 (MOSEKLM) Starting diagnostics output thread (DRQT)
```

In particular, the major information contained in the file is:

- the port `lmgrd` is running on (in this case `27007`, the default port used by **MOSEK**),
- the port `MOSEKLM` is running on (in this case `36867`, by default a value assigned dynamically at startup),
- the path to the license file that was used,
- the hostname and hostid of the machine,
- the licensed part IDs (in this case `PTS` and `PTON`)

If the log file indicates errors consult Sec. 11.2.

7.2.4 Testing the Token Server

In order to verify that the token server is running, go to the `bin` folder of the **MOSEK** installation mentioned above and run:

```
./lmutil lmstat -c 27007@127.0.0.1 -a
```

(if necessary replace `27007` with your port number). The result for a successfully running token server should be similar to the one below:

```
lmutil - Copyright (c) 1989-2021 Flexera. All Rights Reserved.
Flexible License Manager status on Mon 2/28/2022 10:09

License server status: 27007@hostname
    License file(s) on hostname: /home/username/mosek/mosek-floating.lic:

    hostname: license server UP (MASTER) v11.18.3

Vendor daemon status (on hostname):

   MOSEKLM: UP v11.18.3
Feature usage info:

Users of PTS:  (Total of 5 licenses issued;  Total of 0 licenses in use)

Users of PTON:  (Total of 5 licenses issued;  Total of 0 licenses in use)
```

7.2.5 Troubleshooting

If the server won't start, or the client can't check out the license first check Sec. 11.2. It covers most typical issues. Always consult the log file `lmrgd.log` of the server.

If that doesn't help please contact **MOSEK** support at support@mosek.com. Please include the client error messages and the server log file `lmgrd.log`. See Sec. 11.4.

If on Linux you get an error similar to:

```
./lmgrd: No such file or directory
```

then most likely you are using an older version of the token server which required the Linux Standard Base `lsb` package. Either install the package or use the token server from the most recent **MOSEK** distribution (at least 10.2).

7.2.6 Starting lmgrd on boot

To start the license server automatically on boot add the above procedure to your system's startup scripts. Details vary depending on the operating system. Here is an example of a `systemd` service unit for use with `systemctl` on Ubuntu:

```
[Unit]
Description=MOSEK floating license server
After=network.target

[Service]
User=someuser
Environment=MOSEKLM_LIC_FILE=/home/someuser/mosek/mosek.lic
Environment=MOSEKLM_LOG_FILE=/home/someuser/mosek/lmgrd.log
ExecStart=/home/someuser/mosek/10.0/tools/platform/linux64x86/bin/lmgrd -c ${MOSEKLM_
↪LIC_FILE} -l ${MOSEKLM_LOG_FILE}
ExecStop=/home/someuser/mosek/10.0/tools/platform/linux64x86/bin/lmutil lmdown -c $
↪{MOSEKLM_LIC_FILE}
ExecReload=/home/someuser/mosek/10.0/tools/platform/linux64x86/bin/lmutil lmreread -c
↪${MOSEKLM_LIC_FILE}
Type=forking
```

Replace the username and paths with your configuration. It is not recommended to run `lmgrd` as root.

7.2.7 Administration of the token server

We briefly describe how to stop, disable, restart the token server, update the license file and upgrade the server. A full administrator's manual with all options and details can be found in License Administration Guide.

All operations related to stopping/restarting/updating/upgrading can be carried out by stopping the `lmgrd` process and starting a new one.

To stop the token server gracefully, run

```
./lmutil lmdown -c PATH_TO_LICENSE_FILE
```

The program `lmutil` can be found in the `bin` folder inside the **MOSEK** installation, that is:

```
<MSKHOME>/mosek/11.2/tools/platform/<PLATFORM>/bin/
```

where `<PLATFORM>` is the platform you are working on.

Now you can start a new license server, if required, with the desired license file and configuration, from the same or another **MOSEK** installation, according to the instructions in Sec. 7.2.

7.3 Changing default ports and firewall and antivirus issues

The token server consists of two daemons

- `lmgrd`: The token server daemon. It uses the port specified in the license file (by default `27007` for **MOSEK** licenses).
- `MOSEKLM`: A *vendor demon* started by `lmgrd`. Opens its own port, which is either chosen dynamically, or can be specified in the license file (see below).

Both need an open port in the firewall if a **MOSEK** client should be able to check out a license license token.

7.3.1 Find port numbers from the log file

Both port numbers can be determined from the log file of the token server. The `lmgrd` port appears in:

```
9:49:15 (lmgrd) (@lmgrd-SLOG@) === Network Info ===
9:49:15 (lmgrd) (@lmgrd-SLOG@) Listening port: 27007
```

and the `MOSEKLM` vendor daemon port appears in:

```
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) === Network Info ===
9:49:15 (MOSEKLM) (@MOSEKLM-SLOG@) Listening port: 36867
```

7.3.2 Specify fixed ports for the daemons

To specify explicitly which port number each daemon should use you must change the license file. The first lines in a standard **MOSEK** floating license file look like

```
SERVER my_server 123456789ABC 27007
USE_SERVER
VENDOR MOSEKLM
```

Suppose we want the `lmgrd` to use port `27008` and `MOSEKLM` to use port `3084` instead. Then we change those lines of the license file to:

```
SERVER my_server 123456789ABC 27008
USE_SERVER
VENDOR MOSEKLM port=3084
```

Restart the token server and configure your firewall to allow access to the chosen port numbers, in this case `27008` and `3084`.

7.3.3 Testing that the ports are open

To check if both ports required by the token server are open probe them from the client machine(s) with `telnet`:

```
telnet my_server 27008     // Use your server name and lmgrd port number
telnet my_server 3084      // Use your server name and vendor daemon port number
```

or `Test-NetConnection` in Windows PowerShell:

```
Test-NetConnection my_server -Port 27008    # Use your server name and lmgrd port␣
↪number
Test-NetConnection my_server -Port 3084     # Use your server name and vendor daemon␣
↪port number
```

If you get an error message similar to one of

```
Connecting to my_server...Could not open connection to the host, on port 27008:␣
↪Connect failed

TcpTestSucceeded       : False
```

then the port is *not* open, or there is some other network issue preventing the connection (assuming that the token server indeed started correctly). See also the License Administration Guide for more information.

7.3.4 Antivirus

Note that antivirus software can have a similar effect and also block connections, even from the same machine. In this case instruct the software to allow connections through the two ports you specify explicitly in the license file as shown above.

Chapter 8

Client setup

This section describes setting up client machines.

8.1 With a local license file

Default setup

The preferred option is to place the license file `mosek.lic` in the directory `mosek` in the user's home directory. That means

```
$HOME/mosek/mosek.lic
%USERPROFILE%\mosek\mosek.lic
```

on UNIX systems and Windows, respectively. If no other configuration options are set (see below) this is the default location where **MOSEK** looks for a license. This works for all types of licenses. If the license file contains a floating license, the client will use the information in that file to find and contact a token server.

Environment variable

Alternatively, the path to the license file may be set by the environment variable `MOSEKLM_LICENSE_FILE`, for example:

```
MOSEKLM_LICENSE_FILE=/home/user/licenses/mosek.lic
MOSEKLM_LICENSE_FILE=c:\users\mylogin\licenses\mosek.lic
```

Command line options

From the **MOSEK** command line the path to the license file can be set with the option `-l`.

From an API

In the Optimizer API and Fusion API the path to the license file can be set with the method `putlicensepath` of the environment or Model, respectively, before first optimization.

8.2 Without a local license file

Another method to check out a license from a floating license token server is to set the environment variable `MOSEKLM_LICENSE_FILE` in one of the following formats

```
MOSEKLM_LICENSE_FILE=@hostname
MOSEKLM_LICENSE_FILE=port@hostname
```

where `hostname` is the name of the token server machine and `port` is the port on which `MOSEKLM` is listening. Then the client **MOSEK** application will contact the server directly and the possible overhead for opening and reading the license file is eliminated. Observe a potential firewall may block access to the token server.

The same format can be used in conjunction with the command line `-l` option and in the `putlicensepath` method as mentioned in the previous section.

8.3 Testing and debugging

In either case the client configuration can be tested by running the program `msktestlic`.

If any errors related to licensing appear, then go through the error messages and look for a line containing the path to the license file, for example:

```
License path: /home/someplace/mosek/mosek.lic
```

or:

```
License cannot be located. The default search path is ':/home/someplace/mosek/mosek.
↪lic:'
```

This is the *actual* location where this instance of **MOSEK** was trying to locate the license. If it does not correspond to your expectations then go through the setup again or check that this location contains the correct file.

Chapter 9

Additional features

Here we describe some frequently requested additional features available for **floating licenses**.

9.1 Options file

FLEXlm allows some customizations by the user through an options file. An options file (say, `mosek.opt`) can be attached to the license by editing the `VENDOR` line in the license file as follows:

```
VENDOR MOSEKLM OPTIONS=mosek.opt
```

The options file is a text file with one option per line. The full list of options can be found in the section *Managing the options file* of the FLEXnet license administration guide . Some useful ones are:

- `MAX`: restricts the number of tokens one user/group can check out. For example, to restrict user `bill` to at most 2 tokens of each type `PTS` and `PTON` use the option file with content:

  ```
  MAX 2 PTS USER bill
  MAX 2 PTON USER bill
  ```

  Replacing `bill` with `ALL_USERS` will introduce this restriction for all users. Apart from `USER`, such restrictions can also be applied to `HOST` (hostname), `INTERNET` (IP address) and other classifiers.

- `RESERVE`: reserves a number of tokens for one user/group. For example, to reserve one token of each type `PTS` and `PTON` for user `bill` use the option file with content:

  ```
  RESERVE 1 PTS USER bill
  RESERVE 1 PTON USER bill
  ```

  Apart from `USER`, such restrictions can also be applied to `HOST` (hostname), `INTERNET` (IP address) and other classifiers.

Not all options provided by FLEXlm are enabled in **MOSEK**. If the options file was processed successfully, relevant messages will appear in the license server's log file during startup, for example:

```
15:08:30 (MOSEKLM) Using options file: "mosek.opt"
...
...
15:08:30 (MOSEKLM) MAX 2 USER bill for PTS
15:08:30 (MOSEKLM) MAX 2 USER bill for PTON
```

9.2 Borrowing a license

The `lmborrow` functionality allows to check out a license from the token server and keep it checked out (borrowed) on another machine for a specified period of time, without a connection to the token server. This way **MOSEK** can be used on a computer disconnected from the network, for example a laptop used for field service work. When the borrowing period ends, the license automatically expires on the borrowing machine and returns to the token pool of the token server.

Configuring a borrowed license involves a few steps. We assume that a **MOSEK** floating license is configured and working in advance.

Initialize borrowing

Initially the borrowing client must be connected to the server and must be able to check out a license in a normal way.

- From the `bin` of **MOSEK** on the client machine run

  ```
  lmutil lmborrow MOSEKLM 20-may-2023 15:00
  ```

  The date (required) and time (optional) specify the **end** of the borrowing period.

- Run some code which requires **MOSEK** on the borrowing client in order to check the out the licenses for the first time. Make sure to run code which checks out all the parts (`PTS` and if needed `PTON`) you intend to borrow. You can verify that the required licenses were borrowed by running

  ```
  lmutil lmborrow -status
  ```

  It should produce output similar to

  ```
  lmutil - Copyright (c) 1989-2021 Flexera. All Rights Reserved.
  Vendor     Feature                                Version    Expiration
  ------     --------                               ---------- ----------

  MOSEKLM    PTS                                    10.00      20-may-23 15:00
  MOSEKLM    PTON                                   10.00      20-may-23 15:00
  ```

Using the borrowed license

You can now disconnect the client and use the borrowed license in offline mode until its expiry time. When the borrowing period expires the token server will reclaim the borrowed license automatically.

Early check in

You can return the borrowed license to the token server before its designated expiry time. To do this, connect the borrowing client back to the network so that it can communicate with the token server and, depending on which features you borrowed, run one or both of the commands:

```
lmutil lmborrow -return PTS
lmutil lmborrow -return PTON
```

Chapter 10

License in a Cloud Computing Environment

The token server may be deployed in a cloud environment. The main challenge in deploying a token server in the cloud is to guarantee that the `hostid` (in this case the MAC address) stays unchanged when the instance running the token server is stopped.

In the following section we discuss one possible deployment strategy on Amazon EC2.

10.1 Example: Token server in Amazon EC2

The license will be bound to a MAC address. In the most basic Amazon EC2 instance setup the MAC address may change when the instance is stopped and later started again. Below we describe how to work around this.

In Amazon EC2 a MAC address is a persistent resource associated with an Elastic Network Interface (ENI). To keep the MAC address constant we advise creating an ENI that can then be associated with the Amazon EC2 instance acting as a token server. The ENI can later be moved to another instance within the same subnet if the token server needs to be moved to another instance.

Creating a token server Amazon EC2 instance

1. Create an ENI in the subnet into which you wish to launch the token server. Please consult the Amazon EC2 documentation for how to create an ENI.
2. Create a new instance in the same subnet as the ENI. When configuring the network interface select the newly created ENI as a network interface.
3. Launch the instance.
4. *(optional)* If the machine needs a public IP address then create an Elastic IP (EIP) and associate it with the instance after launch. It is not possible to have an automatically assigned public IP addresses when using an ENI in Amazon EC2.
5. Install **MOSEK** on the instance.
6. Retrieve the MAC address associated with the ENI, e.g by inspecting the ENI in the AWS Management Console or by logging into the instance and following the instructions in Sec. 6.
7. Contact support@mosek.com with the relevant MAC address to obtain a valid license file.
8. Make sure the security group associated with the instance running the token server allows for incoming traffic to the token server. Allow for inbound TCP traffic on the ports your token server is listening as shown in Sec. 7.3
9. Install the token server as described in Sec. 7.

Chapter 11

Licensing FAQ

11.1 General questions

11.1.1 How do I know what version/expiry/hostid/port I have in my license file?

The license file is a plain text file. Open it in any text editor and follow Sec. 5.2.

11.1.2 Can I edit the license file?

You can change the hostname, port number(s), add an `OPTIONS` section and edit comments. Any other edits (in particular changing the hostid) will invalidate the license file.

11.1.3 I am upgrading, do I need a new license file or token server?

1. If you are upgrading within the same major **MOSEK** version you don't need a new license file.
2. If you are upgrading to a higher major **MOSEK** version you may need a new license file. If in doubt, check the maximal version supported by your current file (Sec. 5.2). If it is lower than the version you want to upgrade to, you need a new file.
3. If your license is floating and you are upgrading through a point where the FLEXlm version embedded in **MOSEK** was updated then you need to upgrade your token server binaries. Otherwise newer clients may not be able to communicate with an older server and you will experience the issues of Sec. 11.2.2.You can check when FLEXlm was updated in the table in Sec. 5.3.

   In this case disable the old token server. Download, install and use a new token server from the most recent available **MOSEK** distribution, even if you only intend to use it with older **MOSEK** clients; the newest token server will be compatible with all clients and it is always safe and recommended to use it.

11.1.4 Can I reserve some of my floating tokens to a specific IP/username/group?

To reserve a certain number license features for a particular user or IP address, you must create an additional options file and use the `RESERVE` option. For details see Sec. 9.1. For example, to reserve one `PTS` token for user `username` make an options file `res.opt` with content

```
RESERVE 1 PTS USER username
```

and add the following to your license file:

```
VENDOR MOSEKLM OPTIONS=res.opt
```

11.1.5 Can I check out licenses from more than one location?

You can concatenate multiple license search paths (local or remote) with the operating system's path separator. **MOSEK** will then sequentially try to check out a license from all these locations until one is available. For example

```
MOSEKLM_LICENSE_FILE=/home/user/licenses/mosek.lic:27007@licensehost        (Linux/
↪OSX)
MOSEKLM_LICENSE_FILE=c:\users\mylogin\licenses\mosek.lic;27007@licensehost  (Windows)
```

11.1.6 Can I use more than one hostid?

Yes, for a server license. In exceptional situations we can generate a server license file with a list of MAC addresses as hostid. At least one of them has to be active at any time for **MOSEK** to work. For a floating license we can use only a single hostid.

11.1.7 My machine has many network interfaces and I get a long list of `hostids`. Which one should I use?

Ideally choose the MAC address of some permanent physical device (network card) that is expected to be permanently associated with the machine. Avoid MAC addresses of temporary/virtual devices/interfaces which can easily disappear, rendering the license file invalid.

11.1.8 Is it possible to use MOSEK with a floating license on a machine detached from the LAN(WAN)?

Yes. It is possible to use the `lmborrow` functionality. See the Sec. 9.2.

11.1.9 Is it possible to host a token server in the cloud?

Yes, but you will have to create a (small) instance with a permanent MAC address to be used as `hostid`. An example is described in Sec. 10.

11.1.10 Do you have a complete licensing guide that covers all of FLEXlm options?

The ultimate guide is at FLEXnet license administration guide.

11.1.11 I know the hostid of the license server, but what about the clients?

The clients, that is machines on which **MOSEK** optimizations will actually be performed, can be arbitrary, as long as they can connect to the license server to check out a token. The floating license restricts only the physical machine for the token server.

11.1.12 What does MOSEK use to verify the license?

Only the license file. There is no external communication whatsoever.

11.1.13 When does MOSEK return the floating license token?

By default at the end of the session/process or when the **MOSEK** environment is deleted. This reduces the checkout overhead if one process runs multiple optimizations. However, this is completely customizable. For example, you can return the token after each optimization or upon calling a dedicated method. Your API's manual has instructions on how to do it in the section *Technical guidelines* / *The license system*.

11.2 Floating license issues

11.2.1 The `lmutil` and `lmgrd` will not start on Linux: `No such file or directory.`

If you run a command from the licensing system and get this error:

```
user@hostname:~/path_to_mosek$ ./lmutil
./lmutil: No such file or directory
```

then most likely you are using an older version of the token server which required the Linux Standard Base (LSB) package. Either install the package or use the token server from the most recent **MOSEK** distribution (at least 10.2).

11.2.2 I get the error `Vendor daemon is too old.` or `Error 1003: The license server version is too old.`

You are running an older license server (for example, from version 9) and tried to connect to it with a much more recent client (for example, from version 10). The `lmgrd` license server must be at least as new as all the clients who attempt to connect to it. Use the license server distributed with the most recent version of the clients in use. We occasionally update the FLEXlm binaries inside **MOSEK** and then an incompatibility with older license servers may occur. In Sec. 5.3 you can see when the updates were made.

This error has nothing to do with the **MOSEK** version supported by the license file.

11.2.3 The license server will not start.

Always check the server's log file `lmgrd.log`. It will explain the source of the problem. Typical issues are:

- **Wrong hostname:**

  ```
  11:55:03 (lmgrd) "HOSTNAME_REAL": Not a valid server hostname, exiting.
  11:55:03 (lmgrd) Valid license server system hosts are: "HOSTNAME_LICFILE"
  ```

  The hostname in the license file is not the actual hostname of the computer. Either you are running the license server on the wrong machine, or using a wrong file or something changed on the machine and you should contact us for a new license file.

- **Wrong hostid:**

  ```
  8:46:36 (MOSEKLM) Wrong hostid on SERVER line for license file:
  8:46:36 (MOSEKLM) C:\Program Files\Mosek\10.1\tools\platform\win64x86\bin\mosek.
  ↪lic
  8:46:36 (MOSEKLM) SERVER line says a6321bc7ff3f, hostid is af638abf82aa␣
  ↪127c4da8f212
  ```

  ```
  8:46:36 (MOSEKLM) (@MOSEKLM-SLOG@) HostID node-locked in license file:␣
  ↪a6321bc7ff3f
  8:46:36 (MOSEKLM) (@MOSEKLM-SLOG@) HostID of the License Server: "af638abf82aa␣
  ↪127c4da8f212"
  8:46:36 (MOSEKLM) No valid hostids, exiting
  ```

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```
8:46:36 (MOSEKLM) EXITING DUE TO SIGNAL 25 Exit reason 2
8:46:41 (lmgrd) MOSEKLM exited with status 25 (Invalid host)
```

The hostid in the license file does not correspond to actual hardware. Possible reasons are:

- you are running the license server on the wrong machine,
- the network interface used for hostid disappeared because some changes were made to the hardware,
- the network interface used for hostid disappeared because it was a virtual, temporary interface; you are advised to use hostids of physical hardware devices for best stability, see Sec. 6,
- you are using a wrong (perhaps old) license file.

If the hostids / network interfaces indeed changed you will have to contact us for a new file.

- **Incorrect or unreadable license file**, for example:

```
18:54:46 (MOSEKLM) Invalid license key (inconsistent authentication code)
```

It is possible that you invalidated the file by editing hostname or hostid or that you downloaded/saved it incorrectly. See Sec. 5.2 for how a floating license file should look. You should revert to the original file (if applicable) or contact us for a new license file, attaching the current one.

- **Could not open port:**

```
18:52:12 (lmgrd) Failed to open the TCP port number in the license.
```

The token server or vendor daemon could not open a port. Possibly it is already open by another process, or there are firewall issues. In either case consult Sec. 7.3 for a solution. Terminate any `lmgrd` or `MOSEKLM` processes running.

- **Invalid License File**, on Unix:

```
18:54:46 (lmgrd) Server's System Date and Time: Mon Jun 21 2021 18:45:01 CET
18:54:46 (lmgrd) Invalid License File
```

Can appear if the license file has permissions other than 644. Change the license file's permissions to 644.

- **Hostname not in network database:**

```
11:55:03 (lmgrd) Unknown Hostname: HOSTNAME_LICFILE
specified in the license file is not available in the local network database
11:55:03 (lmgrd) EXITING DUE TO SIGNAL 33 Exit reason 1
```

A rare error appearing on MAC where `lmgrd` exits almost immediately. The solution is to edit the file `/etc/hosts` in your system and add a line with the IP address and hostname of your machine.

11.2.4 The client cannot connect to the license server or license checkout times out.

The following symptoms can indicate firewall issues:

- The client cannot connect to the license server. The error is `MOSEK cannot connect to the license server` or `Operation now in progress`.
- The client cannot connect to the license server from a remote machine, but everything works when the client runs on the same machine as the server.
- License checkout times out after about 60 seconds with message `Timeout: operation now in progress`.

First make sure that the license server is up and running and that the `lmgrd.log` file did not indicate any errors (see previous question). Assuming that, follow the instructions in Sec. 7.3 to test and fix possible issues with open ports and firewalls.

This happens typically in networks with tight security settings. Occasionally antivirus software can trigger this problem.

11.2.5 Hostname vs. IP

In a very rare combination of circumstances a floating license checkout can fail due to unsuccessful verification of the server by the client. This can happen if the floating license is issued for a `hostname`, but the client cannot resolve `hostname` and contacts the token server by specifying an explicit IP, say `27007@1.2.3.4`. Then one can get

```
License server machine is down or not responding. (-96,7:2 "No such file or directory
↪")
```

There are two approaches to solve this issue:

- (preferred) make sure the client can resolve `hostname` by adding it to your DNS. On Unix platforms it can also be achieving by editing `/etc/hosts` and adding with the IP address and hostname of the token server.
- (alternative) use the IP address as hostname in the floating license file; contact us for a new file.

11.2.6 I cannot check out a token even though there should be more available.

Most likely there are processes/users who checked out a license but never returned it. The `lmgrd.log` log file on the license server will contain the history of license ckeckouts and checkins which may be used to identify the culprit.

11.2.7 The floating license worked previously and now suddenly stopped.

The most typical reasons for this are:

- The token server was terminated.
- The `hostid` of the license server changed.
- Something changed in the network configuration, for example there are new firewall or antivirus settings preventing the connection.
- The server was restarted and now uses a different port or different vendor port.
- You are trying to check out too many tokens.

Consult the error message reported by the **MOSEK** client for more information. Make sure that the license server is up and running and that the `lmgrd.log` file did not indicate any errors (see previous questions).

If the symptoms resemble Sec. 11.2.4, then follow the instructions in Sec. 7.3 to test and fix possible issues with open ports and firewalls.

If the reason is a change in `hostid` contact us for a new license file.

11.3 Local file issues

11.3.1 The Optimization Toolbox for Matlab or Rmosek says license has expired although I downloaded a new one.

After you put the license file in the right place restart Matlab or R. It caches the license. If that doesn't help **MOSEK** probably uses another license path than you first thought. See next question.

11.3.2 MOSEK says there is no license file or that it expired.

If you are sure that your license file is valid and in the right place, then it is possible that your system is configured to expect the license file elsewhere than you thought. Search for the `mosek.lic` file on the disk and see if there is one in another location. Remove any old expired licenses found.

Go through the error or diagnostic message you received from **MOSEK** and look for lines such as:

```
License path: /home/someplace/mosek/mosek.lic
```

or:

```
License cannot be located. The default search path is ':/home/someplace/mosek/mosek.
↪lic:'
```

This is the *actual* location where this instance of **MOSEK** was trying to locate the license. If it does not correspond to your expectations then go through the setup again or check that this location contains the correct file.

11.4 Need more help

11.4.1 I tried all of the above but it doesn't help.

Send us an email and attach as much as possible of the following data:

- description of the problem,
- the license file,
- the token server log file `lmgrd.log` or its part relevant to the issue (for floating licenses),
- the exact error message reported by the **MOSEK** client, or the output from `mosekdiag`, `mosektestlic`, `mosek -f` or other relevant diagnostic tool.
- **MOSEK** version, operating system, which interface you are using.

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