MOSEK Licensing Guide

Release 8.1.0.78

MOSEK ApS

2019

CONTENTS

CHAPTER

ONE

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.

CHAPTER

TWO

CONTACT INFORMATION

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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	http://blog.mosek.com/
Google Group	https://groups.google.com/forum/#!forum/mosek
Twitter	https://twitter.com/mosektw
Google+	https://plus.google.com/+Mosek/posts
Linkedin	https://www.linkedin.com/company/mosek-aps

In particular **Twitter** is used for news, updates and release announcements.

CHAPTER

THREE

LICENSE AGREEMENT

Before using the **MOSEK** software, please read the license agreement available in the distribution at `<MSKHOME>/mosek/8/mosek-eula.pdf` or on the **MOSEK** website https://mosek.com/products/license-agreement.

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

zlib

MOSEK includes 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 1.2.7, May 2nd, 2012

Copyright (C) 1995-2012 Jean-loup Gailly and Mark Adler

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   claim that you wrote the original software. If you use this software
   in a product, an acknowledgment in the product documentation would be
   appreciated but is not required.
2. Altered source versions must be plainly marked as such, and must not be
   misrepresented as being the original software.
3. This notice may not be removed or altered from any source distribution.

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

fplib

MOSEK includes 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.
*
***************************************************************/
```

CHAPTER

FOUR

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.

4.1 License Types

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. 6.
- **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. 7.

Moreover, note that:

- **institutional academic** licenses are floating licenses.
- **trial** and **personal academic** licenses behave as server licenses, except that they are not tied to a specific computer but can be used on any machine where the license file is present.

For floating, server and institutional academic licenses some computer-dependent information must be provided:

- `hostname`: the name that identifies the computer in the network,
- `hostid`: a unique computer identifier (typically its MAC address).

Instructions for obtaining hostname and hostid can be found in Sec. 5.

4.2 The 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.

Listing 4.1: An example of license file for a floating license.

```
SERVER hulk f4ed3061a731
VENDOR MOSEKLM
FEATURE PTS MOSEKLM 8.0 12-dec-2018 2

[ ... ]

FEATURE PTON MOSEKLM 8.0 26-feb-2017 uncounted

[ ... ]
```

Listing 4.1 shows an extract of a license file for a floating license. We can see that:

- the token server is `hulk` with hostid `f4ed3061a731`,
- the `PTS` feature version `8.0` expires on 12-dec-2018 and the number of `PTS` tokens is 2,
- the `PTON` feature version `8.0` expires on 26-feb-2017 and the number of `PTON` tokens is unlimited.

Perhaps somewhat confusingly server (node-locked) licenses do not contain the `SERVER` line, but the hostid is part of the feature description. A server (node-locked) license does not work and CANNOT be used with a token server.

4.3 Versions

MOSEK version 8 requires a license file with version at least 8. In general the version of the license must be at least as large as the version of **MOSEK**. Only the major version number matters.

In general the token server binaries should be as new as the newest client contacting the token server. If that is not case issues can be expected.

CHAPTER

FIVE

HOSTNAME AND HOSTID

The `hostname` and `hostid` are the two basic computer identifiers used in **MOSEK** license files. The `hostname` is just the standard host name and `hostid` is usually identical to the MAC address of a network card.

The easiest way to obtain `hostname` and `hostid` is to open the shell, go to the directory with **MOSEK** binaries (`<MSKHOME>/mosek/8/tools/platform/<PLATFORM>/bin/`) and run the command

```
mosek -f
```

It will produce output similar to

```
MOSEK Version 8.1.0.23 (Build date: 2017-8-24 15:37:04)
Copyright (c) MOSEK ApS, Denmark. WWW: mosek.com
Platform: Linux/64-X86

FlexLM
 Version                  : 11.14
 Hostname                 : myoptserver
 Host ID                  : "b083fa34ad2c"
 License path             : /home/mosekuser/mosek/mosek.lic

Operating system variables
 LD_LIBRARY_PATH          :

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

Return code - 0  [MSK_RES_OK]
```

If this is not possible, other methods to obtain the `hostname` and `hostid` are outlined below.

5.1 The Hostname

To obtain the host name open a shell and execute the command:

```
hostname
```

5.2 The Host ID

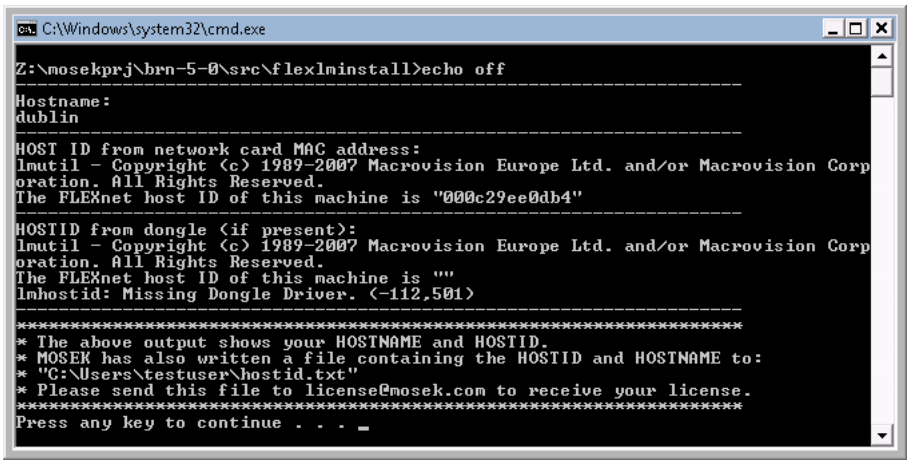
A purchased **MOSEK** license is tied to a particular computer via a unique identifier called a *host ID*. Usually the host ID is identical to the MAC address of a network card. Therefore, the machine needs to be equipped with a network card. However, an actual network connection is not needed as the licensing system requires only the number encoded in the network card.

Important: Please follow the instructions below, and NOT use the shell command `hostid`.

5.2.1 Windows: How to get the Host ID

In the Start Menu under All Programs select *Mosek Optimization Tools* 8.1 and click on **Generate HOSTID**. **MOSEK** will display the hostname and the host ID and generate a file named `hostid.txt` in the user's home directory e.g

```
%UserProfile%\hostid.txt
```



Please provide the `hostid.txt` file whenever the host ID is requested.

5.2.2 Linux: How to get the Host ID

To use the license manager the *Linux standard base 3.0* must be installed. This package is called `lsb-base` or `lsb` in most Linux distributions.

The host ID is obtained as follows:

```
<MSKHOME>/mosek/8/tools/platform/<PLATFORM>/bin/lmutil lmhostid
```

An example output is

```
lmutil - Copyright (c) 1989-2006 Macrovision Europe Ltd.
and/or Macrovision Corporation. All Rights Reserved.
The FLEXnet host ID of this computer is "00001a1a5a6a";
```

In this case `hostid` is `00001a1a5a6a`.

Troubleshooting

If you get an error similar to:

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

then most likely the Linux Standard Base `lsb` package is not installed.

5.2.3 Mac OS: How to get the Host ID

The host ID is obtained as follows:

```
<MSKHOME>/mosek/8/tools/platform/<PLATFORM>/bin/lmutil lmhostid
```

An example output is

```
lmutil - Copyright (c) 1989-2006 Macrovision Europe Ltd.
and/or Macrovision Corporation. All Rights Reserved.
The FLEXnet host ID of this computer is "00001a1a5a6a";
```

In this case `hostid` is `00001a1a5a6a`.

CHAPTER

SIX

FLOATING LICENSE SETUP

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. 6.1 conveys the overall idea.

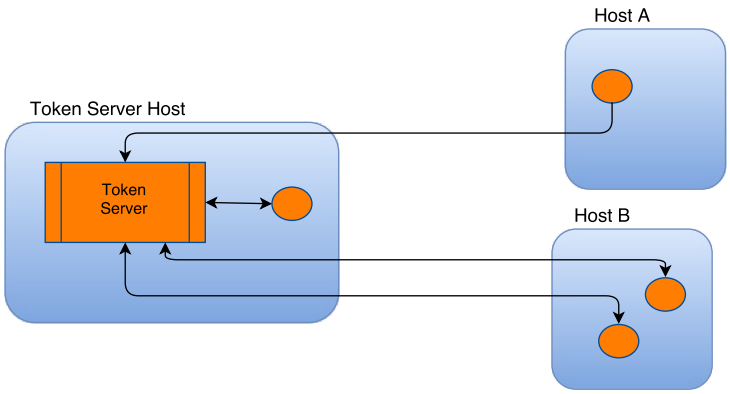


Fig. 6.1: General floating license scheme: any **MOSEK** instances that can connect to the token server can get a valid license.

This implies that you cannot use more license tokens than is 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 computer acting as token server.

A license file that contains at least one floating license always starts with

```
SERVER hostname hostid port
```

Observe that

- installing a license file without a `SERVER` line with a token server is *NOT* needed and is *NOT* possible.
- at most one token server can be running on any given machine.

The token server consists of two daemons

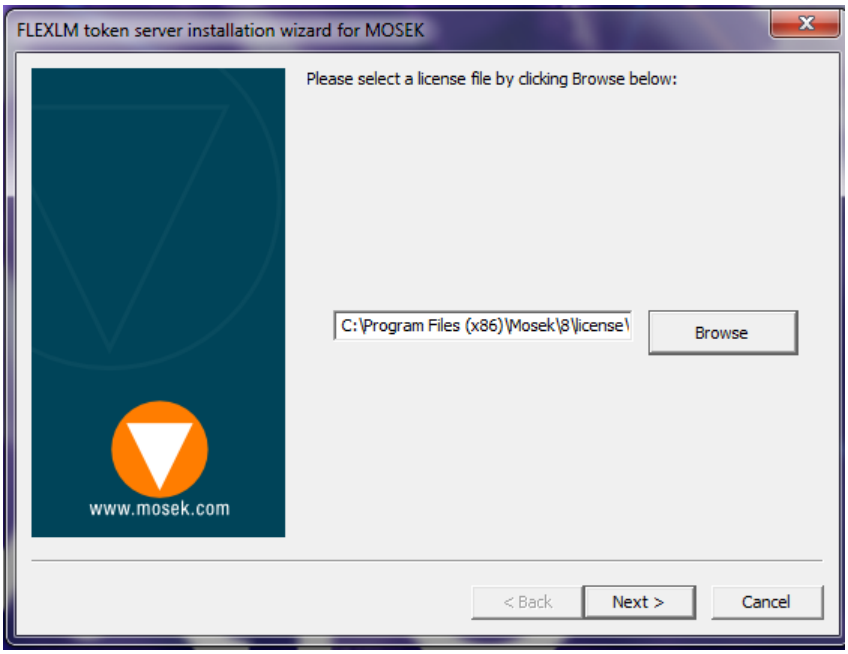
- `lmgrd`: The token server daemon running as a service,
- `moseklm`: A daemon started by `lmgrd`.

The following subsections guide through the setup of a token server on Windows, Linux and Mac OS.

6.1 Windows: Token server setup

Below follows a step-by-step guide for installing a token server on Windows.

- Step 1: Make sure you have *administrative privileges*.
- Step 2: Download the license file and store it on the local drive of the computer running the token server.
- Step 3: In the start menu select **Mosek Optimization Tools** and click on **Install MOSEK token server** to start the license installation wizard.
- Step 4: Click **Next** and then click **Browse** and select the license file.



- Step 5: Click **Next** to install the token server.
- Step 6: Click **Finish**.

6.1.1 Testing the Token Server

In order to verify that the token server is running open a command prompt and run the command `lmutil -c 27007@127.0.0.1 -a`. The result for a running installation is shown below:

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

lmutil - Copyright (c) 1989-2015 Flexera Software LLC. All Rights Reserved.
Flexible License Manager status on Tue 3/7/2017 17:45

License server status: 27007@127.0.0.1
    License file(s) on 127.0.0.1: c:\users\auser\mosek\mosek.lic

 127.0.0.1: license server UP (MASTER) v11.13.1

Vendor daemon status (on 127.0.0.1):

MOSEKLM: UP v11.13.1
Feature usage info:
Users of PTS:  (Total of 4 licenses issued;  Total of 0 licenses in use)
```

You have now installed the token server. Next client users should follow the instructions in Sec. 7 to connect to the token server.

If you have problems installing the token server please contact **MOSEK** support at support@mosek.com. Please include the error messages and the file `lmgrd.log` created during the installation. The above procedure describes how to install the token server using the **MOSEK** token server installation tool. Alternatively the FLEXlm installation tool `lmtools` may be used. For information about this tool and the many other options of FLEXlm please see License Administration Guide.

6.2 Linux: Token server setup

On Linux *Linux Standard Base* (LSB) 3.0 or later must be installed in order for token server to work. The LSB package is called `lsb-base` or `lsb` in most Linux distributions.

The programs `lmgrd` and `MOSEKLM` required for installation can be found in:

```
<MSKHOME>/mosek/8/tools/platform/<PLATFORM>/bin/
```

To start the token server run the following commands:

```
cd <MSKHOME>/mosek/8/tools/platform/<PLATFORM>/bin/
./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. If the token server was started successfully the `lmgrd.log` file will look similar to this

```
cat lmgrd.log
15:03:09 (lmgrd) ----------------------------------------------
15:03:09 (lmgrd)   Please Note:
15:03:09 (lmgrd)
15:03:09 (lmgrd)   This log is intended for debug purposes only.
15:03:09 (lmgrd)   In order to capture accurate license
15:03:09 (lmgrd)   usage data into an organized repository,
15:03:09 (lmgrd)   please enable report logging. Use Macrovision's
15:03:09 (lmgrd)   software license administration  solution,
15:03:09 (lmgrd)   FLEXnet Manager, to  readily gain visibility
15:03:09 (lmgrd)   into license usage data and to create
15:03:09 (lmgrd)   insightful reports on critical information like
15:03:09 (lmgrd)   license availability and usage. FLEXnet Manager
15:03:09 (lmgrd)   can be fully automated to run these reports on
15:03:09 (lmgrd)   schedule and can be used to track license
15:03:09 (lmgrd)   servers and usage across a heterogeneous
15:03:09 (lmgrd)   network of servers including Windows NT, Linux
15:03:09 (lmgrd)   and UNIX. Contact Macrovision at
15:03:09 (lmgrd)   www.macrovision.com for more details on how to
15:03:09 (lmgrd)   obtain an evaluation copy of FLEXnet Manager
15:03:09 (lmgrd)   for your enterprise.
15:03:09 (lmgrd)
15:03:09 (lmgrd) ----------------------------------------------
15:03:09 (lmgrd)
15:03:09 (lmgrd)
15:03:09 (lmgrd) FLEXnet Licensing (v11.4.0.0 build 31341) started on kolding (linux) (5/14/
↪2007)
15:03:09 (lmgrd) Copyright (c) 1988-2006 Macrovision Europe Ltd. and/or Macrovision␣
↪Corporation. All Rights Reserved.
15:03:09 (lmgrd) US Patents 5,390,297 and 5,671,412.
15:03:09 (lmgrd) World Wide Web:  http://www.macrovision.com
15:03:09 (lmgrd) License file(s): /home/sandvik/kolding.lic
15:03:09 (lmgrd) lmgrd tcp-port 27000
15:03:09 (lmgrd) Starting vendor daemons ...
15:03:09 (lmgrd) Started MOSEKLM (internet tcp_port 44950 pid 23251)
```

```
15:03:09 (MOSEKLM) FLEXnet Licensing version v11.4.0.0 build 31341
15:03:09 (MOSEKLM) Server started on kolding for:       PTS
15:03:09 (MOSEKLM) PTOC         PTON            PTOM
15:03:09 (lmgrd) MOSEKLM using TCP-port 44950
```

In this case `lmgrd` is running on port *27007* and `MOSEKLM` is running on port *44950*.

Troubleshooting

If you get an error similar to:

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

then most likely the Linux Standard Base `lsb` package is not installed.

6.2.1 Testing the Token Server

In order to verify that the token server is running execute the commands

```
cd <MSKHOME>/mosek/8/tools/platform/<PLATFORM>/bin/
./lmutil -c 27007@127.0.0.1 -a
```

The result for a successfully running token server is shown below:

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

lmutil - Copyright (c) 1989-2015 Flexera Software LLC. All Rights Reserved.
Flexible License Manager status on Tue 3/7/2017 17:45

License server status: 27007@127.0.0.1
    License file(s) on 127.0.0.1: /home/user/mosek/mosek.lic

 127.0.0.1: license server UP (MASTER) v11.13.1

Vendor daemon status (on 127.0.0.1):

MOSEKLM: UP v11.13.1
Feature usage info:
Users of PTS:  (Total of 4 licenses issued;  Total of 0 licenses in use)
```

If you have problems installing the token server please contact **MOSEK** support at support@mosek.com. Please include the error messages and the file `lmgrd.log` created during the installation.

You have now installed the token server. Next client users should follow the instructions in Sec. 7.

Starting `lmgrd` on boot

For security reasons `lmgrd` should not run as root. To start `lmgrd` at boot time we recommend that you add the following command to your startup script:

```
su USERNAME -c "umask 022; LMGRD -c PATH_TO_LICENSE_FILE -l PATH_TO_LOG_FILE"
```

Where:

- `USERNAME` is a normal, non-root, non-privileged user.
- `LMGRD` is the complete path and to the `lmgrd` binary.
- `PATH_TO_LICENSE_FILE` is the complete path to the license file.
- `PATH_TO_LOG_FILE` is the complete path to the debug log file.

6.3 Mac OS: Token server setup

The programs `lmgrd` and `MOSEKLM` required for installation can be found in:

`<MSKHOME>/mosek/8/tools/platform/<PLATFORM>/bin/`

To start the token server run the following commands:

```
cd <MSKHOME>/mosek/8/tools/platform/<PLATFORM>/bin/
./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. If the token server was started successfully the `lmgrd.log` file will look similar to this

```
cat lmgrd.log
15:03:09 (lmgrd) ----------------------------------------------
15:03:09 (lmgrd)   Please Note:
15:03:09 (lmgrd)
15:03:09 (lmgrd)   This log is intended for debug purposes only.
15:03:09 (lmgrd)   In order to capture accurate license
15:03:09 (lmgrd)   usage data into an organized repository,
15:03:09 (lmgrd)   please enable report logging. Use Macrovision's
15:03:09 (lmgrd)   software license administration  solution,
15:03:09 (lmgrd)   FLEXnet Manager, to  readily gain visibility
15:03:09 (lmgrd)   into license usage data and to create
15:03:09 (lmgrd)   insightful reports on critical information like
15:03:09 (lmgrd)   license availability and usage. FLEXnet Manager
15:03:09 (lmgrd)   can be fully automated to run these reports on
15:03:09 (lmgrd)   schedule and can be used to track license
15:03:09 (lmgrd)   servers and usage across a heterogeneous
15:03:09 (lmgrd)   network of servers including Windows NT, Linux
15:03:09 (lmgrd)   and UNIX. Contact Macrovision at
15:03:09 (lmgrd)   www.macrovision.com for more details on how to
15:03:09 (lmgrd)   obtain an evaluation copy of FLEXnet Manager
15:03:09 (lmgrd)   for your enterprise.
15:03:09 (lmgrd)
15:03:09 (lmgrd) ----------------------------------------------
15:03:09 (lmgrd)
15:03:09 (lmgrd)
15:03:09 (lmgrd) FLEXnet Licensing (v11.4.0.0 build 31341) started on kolding (linux) (5/14/
↪2007)
15:03:09 (lmgrd) Copyright (c) 1988-2006 Macrovision Europe Ltd. and/or Macrovision␣
↪Corporation. All Rights Reserved.
15:03:09 (lmgrd) US Patents 5,390,297 and 5,671,412.
15:03:09 (lmgrd) World Wide Web:  http://www.macrovision.com
15:03:09 (lmgrd) License file(s): /home/sandvik/kolding.lic
15:03:09 (lmgrd) lmgrd tcp-port 27000
15:03:09 (lmgrd) Starting vendor daemons ...
15:03:09 (lmgrd) Started MOSEKLM (internet tcp_port 44950 pid 23251)
15:03:09 (MOSEKLM) FLEXnet Licensing version v11.4.0.0 build 31341
15:03:09 (MOSEKLM) Server started on kolding for:       PTS
15:03:09 (MOSEKLM) PTOC         PTON            PTOM
15:03:09 (lmgrd) MOSEKLM using TCP-port 44950
```

In this case `lmgrd` is running on port *27007* and `MOSEKLM` is running on port *44950*.

6.3.1 Testing the Token Server

In order to verify that the token server is running execute the commands

```
cd <MSKHOME>/mosek/8/tools/platform/<PLATFORM>/bin/
./lmutil -c 27007@127.0.0.1 -a
```

The result for a successfully running token server is shown below:

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

lmutil - Copyright (c) 1989-2015 Flexera Software LLC. All Rights Reserved.
Flexible License Manager status on Tue 3/7/2017 17:45

License server status: 27007@127.0.0.1
    License file(s) on 127.0.0.1: /home/user/mosek/mosek.lic

 127.0.0.1: license server UP (MASTER) v11.13.1

Vendor daemon status (on 127.0.0.1):

MOSEKLM: UP v11.13.1
Feature usage info:
Users of PTS:  (Total of 4 licenses issued;  Total of 0 licenses in use)
```

If you have problems installing the token server please contact **MOSEK** support at support@mosek.com. Please include the error messages and the file `lmgrd.log` created during the installation.

You have now installed the token server. Next client users should follow the instructions in Sec. 7.

Starting `lmgrd` on boot

For security reasons `lmgrd` should not run as root. To start `lmgrd` at boot time we recommend that you add the following command to your startup script:

```
su USERNAME -c "umask 022; LMGRD -c PATH_TO_LICENSE_FILE -l PATH_TO_LOG_FILE"
```

Where:

- `USERNAME` is a normal, non-root, non-privileged user.
- `LMGRD` is the complete path and to the `lmgrd` binary.
- `PATH_TO_LICENSE_FILE` is the complete path to the license file.
- `PATH_TO_LOG_FILE` is the complete path to the debug log file.

6.4 Changing default ports and firewall issues

The token server consists of two daemons

- `lmgrd`: The token server daemon. By default it listens on port *27007*.
- `MOSEKLM`: A demon started by `lmgrd`. Opens its own port; its number can vary between runs unless explicitly specified (see below).

Both need an open port in the firewall if a **MOSEK** client on another computer should be able to check out a license license token. To specify which port number each daemon should use you must change the license file. The first two lines in a standard **MOSEK** floating license file look like

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

To instruct `lmgrd` to use port *27008* and `MOSEKLM` to use port *3084* instead, change the first two lines of the license file to:

```
SERVER my_server 123456789ABC 27008
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`.

Finally, it is a good idea to check if the port is open by using the `telnet` command as follows

```
telnet my_server 27008
```

on the client computer(s). If you get an error message similar to

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

then the port is *not* open. See also the License Administration Guide for more information.

6.5 License Checkout Overhead

In FLEXlm version `11.13.1.2` and higher users may experience an overhead of a few tenths of a second when checking out the license token the first time. This is mainly due to additional checks the FLEXlm performs to detect virtual machines. Unfortunately it is an issue whose fixing is beyond the scope for **MOSEK**. FLEXlm is working on a solution to the issue.

Note that if the **MOSEK** environment is reused and license caching is turned on, then the issue will only be noticed for the first optimization. Please contact support@mosek.com to obtain more information if needed.

CHAPTER

SEVEN

CLIENT SETUP

This section describes setting up client machines.

7.1 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 directory containing the file `mosek.lic` can be set with the option `-l`.

7.2 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.

7.3 Testing

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

CHAPTER

EIGHT

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.

8.1 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. 5.
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. 6.4
9. Install the token server as described in Sec. 6.

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