MOSEK Release notes

Release 8.0.0.81

MOSEK ApS

2017

CHAPTER

ONE

SUPPORTED PLATFORMS

In Table 1.1 the supported platforms and compiler sused to build **MOSEK** are shown.

Table 1.1: Supported platforms

Platform	OS version
linux64x86	RedHat 6 or newer (glibc 2.12)
osx64x86	Mac OS 10.9 or newer
win32x86	Windows 10, server 2008 or newer
win64x86	Windows 10, server 2008 or newer

Although RedHat is explicitly mentioned as the supported Linux distribution, **MOSEK** will work on most other variants of Linux. However, the license manager tools requires *Linux Standard Base 3* or newer is installed.

CHAPTER

TWO

MAJOR CHANGES

Below the major changes

Compiler

- The *Intel C* compiler version 16 is used leading to improved performance on recent *Intel* CPUs for large problems.

Presolve

- Performance of the presolve has been improved.
- The eliminator in the presolve has been reimplemented and is usually faster. Moreover, it requires much less memory.
- Presolve has been improved on conic quadratic problems.

Interior-point Optimizer

- The automatic scaling procedure employed by the conic optimizer has been made aggresive.
- The numerical stability of conic optimizer has been improved significantly. Particularly for semidefinite optimization problems.
- Quadratic and quadratically constrained problems are internally converted to conic form and solved using the conic optimizer. Nevertheless full primal and dual information to the original problems is available.
- The termination criteria when solving quadratic problems with interior-point optimizer is controlled with the new parameters `dparam.intpnt_qo_tol_rel_gap`. `dparam.intpnt_qo_tol_pfeas` and `dparam.intpnt_qo_tol_dfeas`.
- A dualizer for conic quadratic problems is now available. By default it dualizes the problems before optimizing if deemed worthwhile. The dualization is transparent to the user and can be turned off.
- The linear algebra in the conic optimizer is now parallelized using Cilk+ and scales better when the number of threads is increased. Moreover, for smallish problem susing too many threads does not hurt performance.
- The computational efficiency of the graph partioning based ordering method has been improved.

Mixed-integer Optimizer

- Only one mixed integer optimizer is available which corresponds to the mixed integer conic optimizer in version 7.
- Removed support for (never used) feature branching prorities.

Linear algebra utilities

The following functions have been added:

- sparse Cholesky factorization of a semidefinite matrix and
- solution of a sparse triangular system of linear equations.

License Manager

The FLEXlm license sytem has been updated to version `11.13.1.2`. The update introduces an overhead of about 0.4 seconds when a floating license is checked out for the first time. It is a side effect of additional checks performed by the license server. See the licensing manual or ask **MOSEK** support for advise on how to mitigate the issue.

Removed features

- The primal network simplex optimizer has been removed. (It is suggested to use the dual simplex optimizer instead.)
- The primal-dual simplex optimizer has been removed. (It is suggested to use the dual simplex optimizer instead.)
- The concurrent optimizer has been removed. (It is suggested to use the interior-point optimizer instead.)

CHAPTER

THREE

KNOWN ISSUES

- On Mac OS when solving problems where the nonlinear functtion callbacks are defined multi threading is turned off due to a problem with the OpenMP library. For linear and conic problems threading is available as usual.

CHAPTER

FOUR

BUG FIXES

8.0.0.81

- Removed debugging output (Fusion).

8.0.0.80

- Fixed a bug appearing when a sparse expression is used in a PSD constraint (Fusion).

8.0.0.79

- Fixed a bug casuing a floating point exception in the interior-point optimizer in rare cases.

8.0.0.75

- Fixed a bug causing the objective to be incorrect in Fusion/C++.

8.0.0.74

- Fixed an issue triggering an assert in the postsolve in rare cases.

8.0.0.73

- Fixed an issue in the the MAC OS conda package.

8.0.0.70

- Fixed an issue in the conda packages.
- Fixed an issue in the documentation related to the mathjax usage.

8.0.0.69

- Leak of kernel handles fixed in Windows.
- Fixed issue with rapidly gowing memory usage when solving multiple linear optimization problems. This issue only occurs on Windows and when using multiple threads.

8.0.0.64

- Corrected an error message in the optimization toolbox for MATLAB.

8.0.0.63

- Fixed a bug in the task write occurring for very large files.
- Fixed a bug causing an assert for very large problems.

8.0.0.62

- Fixed a bug causing too many threads to be employed in the mixed integer optimizer.

8.0.0.61

- Updated the Flexlm license system to version 11.14.1.0.

8.0.0.60

- The interior point stopping criteria as defined by `dparam.intpnt_co_tol_pfeas`, `dparam.intpnt_co_tol_dfeas` and `dparam.intpnt_co_tol_rel_gap` now also affect the solution of subproblems in the mixed integer optimzer.

8.0.0.58

- Removed debugging output from SCopt interface (Python,Java,C#).

8.0.0.57

- Fixed a rarely occurring bug in the presolve causing a crash.

8.0.0.55

- Updated the documentation.
- Fixed a bug in the threading that caused MOSEK to start too many threads.

8.0.0.53

- Improved the speed of the presolve.

8.0.0.52

- Improved the presolve so it detects dual infeasibility more frequently.

8.0.0.51

- Fixed various errors and typos in examples.
- *Fusion*: Made some functions public that help manage the license.

8.0.0.50

- *Fusion*: Fixed a bug occurring when a nondefault solution is obtained.

8.0.0.49

- A major update of the documentation but still work in progress.

8.0.0.48

- Improved performance of the interior-point optimizer when the problem to be solved has many 3 dimensional matrix variables.
- Fixed a bug in the presolve causing the solution to be infeasible in rare cases.
- Fixed a bug causing an assert if `iparam.inpnt_order_method` is set to none.

8.0.0.47

- Updated the R interface.
- Added missing default parameters for a number of functions. Corrected invalid default parameters for intlinprog.
- Fixed an issue related to `dparam.intpnt_tol_infeas` is set to 0.0.
- Fixed an issued caused when the conic optimizer dualizes a problem. The internal parameter setting did not adjust for dualization.
- MATLAB toolbox: Improved the mosekdiag function.
- *Fusion* C++ API: Fixed a memory leak issue.
- *Fusion*: Fixed a bug occurring when a sparse Expression was used with a conic constraint.

8.0.0.46

- Fixed a bug in the file scopt-ext.c
- Fixed an issue that could occur for 3 dimensional matrix variables.
- Fixed an issue that caused `dparam.intpnt_tol_dsafe` to be ignored by the conic interior-point optimizer.

8.0.0.45

- Fixed an integer32 overflow causing an assert.
- Reduced the storage consumption in the interior-point optimizer in rare cases.
- The presolve is faster in rare cases.
- Updated the documentation.

8.0.0.44

- *Fusion* for C++: `mosek::releaseGlobalEnv()` added to perform global cleanup before exit.

8.0.0.43

- Fixed an issue causing an infinite loop on certain semidefinite optimization problems.
- Improved the documentation.

8.0.0.41

- Removed debug print out.

8.0.0.40

- Fixed a bug causing to many threads to created in some cases.
- Made problem input much faster in some cases.
- Fixed an issue triggering an assert in the linear and conic optimizers.

8.0.0.39

- The CBF file write generated an assertion.
- Improved the documentation.

8.0.0.38

- Fixed several bugs in the example files expopt.c and dgopt.c.
- Improved the documentation.

8.0.0.37

- Fixed various minor issues.
- Reduced the memory consumption dramatically in a spacial case.

8.0.0.36

- Fixed a bug in the sparse Cholesky factorization function.
- Fixed a bug occurring when removing variables from the problem.
- Fixed several bugs occurring if `iparam.intpnt_tol_psafe` or `iparam.intpnt_tol_psafe` is set to a nondefault value.

8.0.0.35

- Fixed a bug in the presolve occurring rarely.
- Fixed a bug causing an inaccurate primal solution be reported to certain quadratically constrained problem.
- Removed support for MATLAB R2013a and R2013b on Windows.

8.0.0.34

- Fixed a bug that could result in a segmentation fault if the parameter `mio_node_optimizer` was set to a nondefault value.

8.0.0.33

- Fixed a bug in the conic optimizer occurring in special situations when a problem contains 3 dimensional matrix variables.

8.0.0.32

- *Fusion* APIs: Fixed various bugs in `Expr`.
- *Fusion* APIs: `Expr.transpose()` is now a member method instead of a static method.
- *Fusion* APIs: Performance improvements in `Expr` constructors and in `Model.constraint()` .
- *Fusion* APIs: A bug regarding print constraints.

8.0.0.31

- Fixed a case in which the integer parameter `intpnt_order_method` was ignored.
- *Fusion* APIs: Fixed that stacking expressions containing `const` terms may lead to crash.
- *Fusion* APIs: Certain expressions were included in a PSD cone could cause crash.
- *Fusion* APIs: Incorrect inPSDCone constraint when a expression is not symmetric.

8.0.0.30

- Fixed a performance issue in the semidefinite optimizer for problems with many small cones.
- *Fusion* APIs:: Fixed incorrect expression printing.

8.0.0.29

- Fixed several rarely occurring bugs in the presolve.
- Fixed an issue with the `RPATH` in the MEX files on Linux.
- Fixed an issue causing a crash in the function `inputdata`.
- Python optimizer APIs: Improve arrays handling.

8.0.0.28

- Fixed a memory leak in the interior-point optimizer.