

The MOSEK Release Notes. Version 6.0 (Revision 135).



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Chapter 1

Changes and new features in MOSEK

The section presents improvements and new features added to MOSEK in version 6.0.

1.1 Compilers used to build MOSEK

MOSEK has been build with the compiler shown in Table 1.1.

Platform	C compiler
linux32x86	Intel C 11.0 (gcc 4.3, glibc 2.3.4)
linux64x86	Intel C 11.0 (gcc 4.3, glibc 2.3.4)
osx32x86	Intel C 11.1 (gcc 4.0)
osx64x86	Intel C 11.1 (gcc 4.0)
solaris32x86	Sun Studio 12
solaris64x86	Sun Studio 12
win32x86	Intel C 11.0 (VS 2005)
win64x86	Intel C 11.0 (VS 2005)

Table 1.1: Compiler version used to build MOSEK

1.2 General changes

- A problem analyzer is now available. It generates an simple report with of statisics and information about the optimization problem and relevant warnings about the problem formulation are included.
- A solution analyzer is now available.

- All timing measures are now wall clock times
- MOSEK employs version 1.2.3 of the zlib library.
- MOSEK employs version 11.6.1 of the FLEXnet licensing tools.
- The convexity of quadratic and quadratic constrained optimization is checked explicitly.
- On Windows all DLLs and EXEs are now signed.
- On all platforms the Jar files are signed.
- MOSEK no longer deals with ctrl-c. The user is responsible for terminating MOSEK in the callback.

1.3 Optimizers

1.3.1 Interior point optimizer

- The speed and stability of interior-point optimizer for linear problems has been improved.
- The speed and stability of the interior-point optimizer for conic problems has been improved. In particular, it is much better at dealing with primal or dual infeasible problems.

1.3.2 The simplex optimizers

- Presolve is now much more effective for simplex optimizers hot-starts.

1.3.3 Mixed-integer optimizer

- The stopping criteria for the mixed-integer optimizer have been changed to conform better with industry standards.

1.4 API changes

- The Mosek/Java API is now built for SUN Java 1.5 and later.
- The Mosek/.NET API is now built for MS .NET 2.0 and later.
- The Mosek/Python API is now based on Python CTypes and uses NumPy instead of Numeric. Python 2.5 and later is supported on all platforms where the `ctypes` module is available.

1.5 License system

- The license conditions have been relaxed, so that a license is shared among all tasks using a single environment. This means that running several optimizations in parallel will only consume one license, as long as the associated tasks share a single MOSEK environment. Please note this is NOT useful when using the MATLAB parallel toolbox.

- By default a license remains checked out for the lifetime of the environment. This behavior can be changed using the parameter `MSK_IPAR_CACHE_LICENSE`.
- Flexlm has been upgraded to version 11.6 from version 11.4.

1.6 Other changes

- The documentation has been improved.

1.7 Interfaces

- The AMPL interface has been augmented so it is possible to pass an initial (feasible) integer solution to mixed-integer optimizer.
- The AMPL interface is now capable of reading the constraint and variable names if they are available.

1.8 Platform changes

- MAC OSX on the PowerPC platform is no longer supported.
- Solaris on the SPARC platform is no longer supported.
- MAC OSX is supported on Intel 64 bit X86 i.e. `osx64x86`.
- Add support for MATLAB R2009b.

Chapter 2

Limitations and known issues

- Operating system user names containing spaces can result in problems with the license system.
- The interior-point optimizer cannot exploit multiple threads on the Solaris platforms.
- We advise against simultaneously using multiple MOSEK environments within a single program as this might cause problems with the Flexlm licensing system.
- Support for multithreading in the interior-point optimizer is only available MATLAB version R2009B and newer.

Chapter 3

Bug fixes and improvements

6.0.0.135

- Fixed a number of bugs in the mixed integer optimizer.

6.0.0.134

- Made it possible to solve problems with conic constraints from AMPL.

6.0.0.133

- Fixed some bugs in the AMPL interface.

6.0.0.132

- Add support for conic constraints in the AMPL interface.

6.0.0.131

- Fixed a bug occuring under certain special circumstances in the interior-point optimizers when multiple threads are employed.

6.0.0.130

- Some internal changes.

6.0.0.129

- Fixed bug in the mixed integer optimizer occurring on some mixed integer conic quadratic problems.

6.0.0.128

- Fixed several bugs in the mixed integer optimizer.
- Fixed a bug that would occur when running one of the interior-point optimizers and using many threads.

6.0.0.127

- Fixed a bug in the dual simplex optimizer.

6.0.0.126

- Fixed a bug in the primal simplex optimizer.
- Fixed a bug in the dual simplex optimizer.
- Fixed a bug in the presolve.

6.0.0.125

- Fixed a recently introduced bug in the network detection procedure.

6.0.0.124

- Upgrade FlexLM license software to version 11.10.0.
- Fixed a bug in the network detection procedure.

6.0.0.123

- Fixed a bug in the convexity checker.
- Fixed performance issue in the mixed integer optimizer.
- Improved the interior point optimizers for linear problems for certain hard problems.

6.0.0.122

- Fixed a bug that made enum values iterable in Python.
- Fixed a problem in the output log.
- Fixed an issue in the mixed integer optimizer.

6.0.0.121

- Added support for the MinGW-w64 toolchain on win64x86. The 64-bit applications build with MinGW-w64 should be linked against `libmosek_64_6_0.a`.

6.0.0.120

- Fixed a bug in the mixed integer optimizer that caused it to crash in rare cases.
- Added support for Python on the platform osx64x86.

6.0.0.119

- Fixed several bugs in the mixed integer optimizer.

6.0.0.118

- Fixed a bug in the dual simplex optimizer.

6.0.0.117

- Fixed a documentation issue.

6.0.0.116

- Fixed an issue in the interior-point optimizer for linear problems.

6.0.0.115

- The simplex optimizer did callback too frequently. It has been fixed.

6.0.0.114

- Fixed a bug in the concurrent optimizer.
- Fixed a bug in the mixed-integer optimizer.

6.0.0.113

- Fixed a bug in the mixed integer optimizer.

6.0.0.112

- Removed debug output occurring when reading MOSEK binary task files.
- Fixed a bug in the mixed integer optimizer.

6.0.0.111

- Fixed several bugs in the mixed integer optimizer.

6.0.0.110

- Fixed several bugs in the mixed integer optimizer.

6.0.0.109

- Fixed several bugs in the mixed integer optimizer.

6.0.0.108

- Fixed several bugs in the mixed integer optimizer.

6.0.0.107

- Fixed several bugs in the mixed integer optimizer.

6.0.0.106

- Fixed a bug in the conic optimizer that in special cases made MOSEK report a nonoptimal solution.
- Fixed several bugs in the mixed integer optimizer.
- The Flexlm license system has been downgraded to version 11.9 on Linux due to a bug in flexlm that caused the license manager to use excessive CPU resources.
- A problem running Flexlm license manager under Ubuntu has been discovered. A workaround to this problem is to create a missing directory using the command:

```
sudo ln -s /tmp /usr/tmp
```

6.0.0.105

- Fixed a couple of bugs in the graph partitioning based ordering algorithm (employed in the interior-point optimizers).
- Improved the network structure detection capabilities.

6.0.0.104

- Fixed a couple of bugs in the graph partitioning based ordering algorithm (employed in the interior-point optimizers).
- Fixed a bug in the basis identification procedure. This bug occurs very rarely.

6.0.0.103

- Fixed a bug in the mixed integer optimizer that caused MOSEK to crash in certain cases. This happened only if a very low time limit was used.

6.0.0.102

- Fixed a bug in the mixed integer optimizer that caused MOSEK to crash in certain cases.

6.0.0.101

- Fixed another issue in the graph partitioning based ordering.

6.0.0.100

- Fixed a bug in the graph partition based ordering that in rare cases could cause a crash.

6.0.0.99

- Improved the manual.
- Fixed a number of bugs in the mixed integer optimizer.
- Fixed an issue in the presolve occurring very rarely.

6.0.0.98

- Fixed a bug causing an assert on very large problems.
- FLEXlm has been upgraded to version 11.9.1 because some bugs in FLEXlm have been fixed.

6.0.0.97

- Fixed several issues appearing when the input data had NaNs.
- FLEXlm has been upgraded to version 11.9 because some bugs in FLEXlm has been fixed.

6.0.0.96

- Fixed several bugs in the mixed integer optimizer.

6.0.0.95

- Fixed several bugs in the mixed integer optimizer.
- Fixed a bug in the conic optimizer causing an assert for certain problems.

6.0.0.94

- Fixed a bug in `MSK_analyzeproblem` that could cause a segmentation fault on problems containing cones.

6.0.0.93

- Fixed a bug in the Python API array module that caused a segmantation fault under certain circumstances at 64 bit systems.

6.0.0.92

- Made some improvement to licensing system.

6.0.0.91

- Several bugs in the mixed integer optimizer have been fixed.

6.0.0.90

- A rarely occurring issue in Java interface has been fixed.

6.0.0.89

- Fixed a few bugs in the mixed integer optimizer.

6.0.0.87

- Fixed a performance issue in the interior-point optimizers occurring rarely.
- Fixed a bug in the conic optimizer occurring on problems that has more constraints than variables.

6.0.0.86

- Fixed a bug occurring when presolving a solution i.e. only relevant in the hotstart case.
- Fixed several bugs in the mixed integer optimizer.

6.0.0.85

- Fixed a several bugs in the mixed integer optimizer.
- Fixed a bug in OPF file writer.
- Fixed a performance issue in the interior-point optimizer occurring very rarely.

6.0.0.83

- Improved the performance of the mixed integer optimizer for certain problems.

6.0.0.82

- Fixed a bug in the presolve occurring on numerical unstable problems.

6.0.0.81

- Improved the section about the MOSEK and MATLAB integration in the toolbox manual.

6.0.0.80

- Fixed a bug in the mixed integer optimizer.
- Improved the automatic selection of the simplex optimizer when hot-starting.

6.0.0.79

- Fixed a bug in a error message.
- Fixed several bugs in the mixed integer optimizer. In one case the optimizer incorrectly declared a problem infeasible.
- Fixed a bug in the LP writer that occurred when numbers close 1 or -1 occurred.

6.0.0.78

- Fixed several bugs the 64bit Python interfaces.
- Fixed a bug in the mixed integer optimizer.

6.0.0.77

- Included support for Python 3+.

6.0.0.76

- Fixed a bug in the mixed integer optimizer.

6.0.0.75

- Fixed an issue in the AMPL binary.

6.0.0.74

- Fixed an issue in the basis identification.
- Improved the stability of interior-point optimizer for linear problems.
- Fixed an issue in the mixed integer optimizer.

6.0.0.73

- Fixed an issue in the conic interior-point optimizer.

6.0.0.70

- Previous versions of MOSEK employed a high resolution timer on Windows. Unfortunately that gave rise to problems on the Amazon EC2 cloud. Therefore, MOSEK is now employing a low resolution timer that does not cause problems.

6.0.0.69

- Fixed several issues in the mixed integer optimizer.
- Fixed an issue `MSK_putsolutioni`.

6.0.0.68

- Fixed an issue with an assert in the conic optimizer.
- Fixed a performance issue in the presolve.

6.0.0.67

- Fixed several bugs in the mixed integer optimizer.
- Fixed a bug in the OPF writer.

6.0.0.66

- Improved the interior-point optimizer for linear problems.
- Fixed several bugs in the mixed integer optimizer.
- Fixed a bug that potentially affecting all the interior-point optimizers.

6.0.0.65

- Fixed an issue in `MSK_appendcone` that occurs when appending a cone to an empty task.

6.0.0.64

- The AMPL modeling shell is updated to version 2010.01. The new version fixes many bugs. New license files are required.
- Improve the stability in the interior-point optimizer for linear problems.

6.0.0.63

- Fixed a bug in the mixed integer optimizer.

6.0.0.62

- Fixed several bugs in the mixed integer optimizer.
- The problem analyzer is now available when using the MOSEK optimization toolbox for MATLAB.
- Fixed a few typos in the manual.
- Fixed a bug in the presolve.

6.0.0.61

- Fixed an issue in the CPU detection affecting new AMD CPU based computers.

6.0.0.60

- Fixed a bug in the interior-point optimizer that made it use a lot of space in certain cases during the setup.
- Fixed an issue in the presolve that could cause an assert on near infeasible or badly scaled problems.

6.0.0.59

- Fixed several bugs in the AMPL interface.

6.0.0.58

- Fixed a bug in the mixed integer optimizer.

6.0.0.57

- Include the optimization toolbox for MATLAB on 64 bit OSX.

6.0.0.56

- Build the Linux versions on RedHat with glibc 2.3.4 instead of RedHat 5.

6.0.0.55

- Fixed a bug that occurs in the presolve on all problems with many more constraints than variables.
- Fixed a bug that occurring when reading a solution into an empty task.
- On some problems dual simplex returned an incorrect dual infeasibility certificate. This issue is fixed.
- A bug regarding detecting primal infeasibility in the network optimizer has been fixed.
- A serious memory overwrite fixed in the simplex network extration module.
- A rarely occuring cycling bug in the primal simplex optimizer has been fixed.
- Fixed a bug in the LU factor module. This affects all the simplex optimizers as well as the basis identification procedure.
- Fixed a performance issue in the mixed integer optimizer.

6.0.0.54

- Fixed a bug in the manuals.
- Fixed a bug in the optimization toolbox for MATLAB. The problem occurred if the A matrix is not a sparse matrix.
- Fixed a bug occurring on certain nonlinear problems.

6.0.0.53

- The bug fixes for the mixed integer optimizer mentioned in release 6.0.0.52 had not been included in the release version. They are included in this version.
- Fixed a bug in the mixed integer optimizer occurring on nonlinear problems.

6.0.0.52

- Fixed a bug occurring on certain nonlinear problems.
- Fixed a bug in the mixed integer optimizer that caused the log information to be wrong.
- Fixed a bug in the mixed integer optimizer that could occur on problems with ranged constraints.
- Fixed a bug occurring when setting `presolve_tol_aj` was set to zero. That is no longer an acceptable value.

6.0.0.51

- Fixed a bug the in the MATLAB function `lsqnonneg`.
- Fixed several issues in the mixed integer optimizer.
- Fixed a bug in the linear dependency checker.

6.0.0.50

- Fixed a few minor issues in the manual.
- Improved the matrix reordering. The problem `zib01` is an example.
- Fixed an innocent uninitialized read.

6.0.0.49

- Fixed some log output issues.
- Updated the Microsoft Solver Foundation documentation and examples.

6.0.0.47

- First final release.

6.0.0.46

- First several problems in the documentation.

6.0.0.44

- First a minor issue in the basis identification.

6.0.0.43

- Switched to release candidate mode.

6.0.0.41

- Fixed several issues in the simplex optimizers.
- Fixed an issue in the Python interface for win32x86.

6.0.0.40

- Fixed several issues in the simplex optimizers.

6.0.0.39

- Improved the problem analyzer.
- Fixed some issues in the mixed integer optimizer.
- Improved the simplex optimizers.

6.0.0.38

- Removed some debug output.
- Fixed a few minor issues regarding the problem type reporting.
- Fixed a in the presolve causing an assert in sepcial cases.
- Fixed several issues in the mixed-integer optimizer.

6.0.0.37

- Fixed several problem in the manuals.
- Fixed several bugs in the simplex optimizer.

6.0.0.36

- Fixed a bug in the problem analyzer.
- Changed the way the licensing is handled internally.

6.0.0.34

- Fixed several bugs in the mixed-integer optimizer.

6.0.0.33

- Fixed a bug that could cause an crash in the extreme case.

6.0.0.32

- Fixed an issue related to the usage of openmp.

6.0.0.31

- Fixed several problem in MATLAB optimization toolbox.
- Improved the performance of the dual simplex optimizer.

6.0.0.30

- Improved the AMPL interface.

6.0.0.29

- Upgraded the compiler on OSX and implemented a workaround for a compiler bug.
- Improved the termination criteria in conic optimizer.

6.0.0.28

- Fixed various cosmetic issues.
- Disabled the Python interface for win64x86.

6.0.0.27

- Fixed some issues in the manuals.
- Fixed some issues in the Python interface.

6.0.0.26

- Fixed some issues in the simplex optimizers.
- Fixed an issue that affected the Solaris 32 bit platforms.

6.0.0.25

- Fixed an issue affecting the interior-point optimizers.

6.0.0.24

- Fixed an issue regarding termination of the mixed integer optimizer.
- Fixed a few issues in the simplex optimizers.
- Improved the performance of the simplex optimizers.

6.0.0.23

- Fixed a problem in the LP and OPF readers and writers.
- Fixed a few issues in the simplex optimizers.

6.0.0.22

- Fixed a number of bugs in the simplex optimizers.
- The presolve time was reported as zero when the simplex optimizer was used.

6.0.0.21

- Fixed a number of bugs in the simplex optimizers.
- Fixed yet another bug occurring on very large problems when using an interior-point optimizer.

6.0.0.20

- Fixed a number of bugs in the simplex optimizers.
- Fixed a bug occurring on very large problems when using an interior-point optimizer.

6.0.0.19

- Fixed a number of bugs in the simplex optimizers.

6.0.0.18

- Fixed a number of bugs in the simplex optimizers.
- Fixed many bugs in the mixed integer optimizer.
- Fixed several bugs in the conic optimizer.

6.0.0.17

- Fixed a number of problems in the presolve and postsolve.

6.0.0.15

- Fixed a bug in the presolve that could occur on infeasible problems.

6.0.0.14

- Fixed a large number of bugs in the simplex optimizers.

6.0.0.12

- Fixed several bugs in the presolve.

6.0.0.10

- First beta.

3.1 Mosek/Java API

- The `mosek.jar` library now requires Java 1.5.
- Interface constants have been replaced with native Java Enums improving type safety for several API methods.