The MOSEK Release Notes. Version 5.0 (Revision 138).

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Chapter 1

Changes and new features in MOSEK

The section presents improvements and new features added to MOSEK in version 5.0.

1.1 File formats

- The `OSiL` XML format for linear problems is now supported as output-only format.

- The new Optimization Problem file Format (OPF) is now available. It incorporates linear, quadratic, and conic problems in a single format, as well as parameter settings and solutions.

- The `OBJNAME` section is now supported in the MPS format.

1.2 Optimizers

- The interior-point solver is about 20% faster on average for large linear problems, compared to MOSEK 4.0.

- The dual simplex solver is about 40% faster on average compared to MOSEK 4.0.

- For the primal simplex solver, handling of problems with long slim structure has been improved.

- For both simplex optimizers numerical stability, hot-start efficiency and degeneracy handling has been improved substantially.

- A simplex network flow optimizer is now available. In many cases the specialized simplex optimizer can solve a pure network flow optimization problem up to 10 times faster than the standard simplex optimizer.

- Presolve is now by default turned on for hot-start with the simplex optimizers.

- The mixed integer optimizer now includes the feasibility pump heuristic to find a good initial feasible solution.

- Full support for setting branching priorities on integer constrained variables.

1.3   API changes

- The function MSK_putobjsense has been introduced. This should be used to define objective sense instead of the parameter MSK_IPAR_OBJECTIVE_SENSE.

1.4   License system

- The Flexlm license software has been upgraded to version 11.4.

- Dongles are supported in 64 bit Windows.

1.5   Other changes

- The documentation has been improved. Each interface now have a complete dedicated manual, and many code examples have been added. The HTML version has been subject to heavy cosmetical changes.

1.6   Interfaces

- A complete Python interface is now available.

- The MATLAB interface supports the MATLAB versions R2006a, R2006b, and R2007a.

- The general convex interface has been disabled in the Java and .NET interfaces.

- The Java API provides an interface to the native scopt functionality.

1.7   Supported platforms

- Mac OSX 32 bit for x86 version has been added.

- Solaris 32 bit for x86 version has been added

- Solaris 64 bit for x86 version has been added.

Chapter 2

Limitations and known issues

- The interior-point optimizer cannot exploit multiple threads on the MAC OSX and Solaris plat-forms.

- The parallel features of MOSEK are not likely to work under MATLAB.

- If software enforced data execution prevention is turned on, then MOSEK might crash. We suggest that this feature is turned off.

- We recommend to use kernel 2.6 or higher on Linux. There might be problems with kernel 2.4.

Chapter 3

Bug fixes

5.0.0.138

- Fixed a bug in the mixed integer optimizer.

5.0.0.137

- Fixed a bug in primal simplex. It would only occur in the hotstart case on problems with a large number of variables and few constraints.

5.0.0.136

- Fixed a bug that in special cases triggered an assert. The problem only occured if the optimization problem is solved completely in presolve.

5.0.0.134

- Fixed several bugs in the mixed integer optimizer.

5.0.0.133

- Fixed several bugs that made the interior-point optimizer crash. It would only happen on problems with a very large Cholesky factors.

5.0.0.132

- Fixed a recently introduced bug in the OPF reader.

5.0.0.131

- Fixed a bug in the conic optimizer.

5.0.0.130

- Removed some debug output.

5.0.0.129

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

5.0.0.127

- Reduced the numer of times the timing routine is called internally in MOSEK

5.0.0.126

- Fixed some problems in the Java API related to the callbacks. A minor performance improvement can be expected in certain cases.

- Fixed several bugs in the simplex optimizer.

5.0.0.125

- Fixed a problem in the mixed integer optimizer.

5.0.0.124

- Fixed a bug in the MOSEK LP reader.

5.0.0.122

- Fixed several bugs in the mixed integer optimizer.

- Fixed a performance bug in `MSK_getsolutionstatus`.

5.0.0.121

- Fixed several bugs in the mixed integer optimizer.

5.0.0.120

- Fixed a few bug in the presolve.

5.0.0.119

- Fixed a few bugs in the AMPL interface occuring in rare cases on mixed integer problems.

5.0.0.118

- Fixed a recently introduced bug in the Java optimizer API.

5.0.0.117

- Fixed a problem in the conic optimizer.

- Fixed a memory leak in the Java optimizer API.

5.0.0.116

- Add initial support for the Microsoft Solver Foundation. Hence, MOSEK can be used as an external solver from Microsoft Solver Foundation.

5.0.0.115

- Fixed memory leak occuring in the Java optimizer API.

5.0.0.114

- Fixed a bug in the dual simplex optimizer which in rare cases can lead to a incorrect dual infeasibility conclusion.

5.0.0.113

- Fixed a problem in `MSK_putcone`. It did not return a error of the cone index was incorrect.

5.0.0.112

- Fixed problem in the dual simplex optimizer that made it report of space when it was not.

5.0.0.111

- The interior-point optimizer may dualize the problem before optimizing a linear problem. The heuristic that decides when to dualize has been changed a bit.

- A number of bugs has been fixed in the mixed integer optimizer.

- Fixed problem in the dual simplex optimizer that made it report of space when it was not.

5.0.0.110

- The simplex generated incorrectly an assertion in very special cases.

- A number of bugs has been fixed in the mixed integer optimizer.

5.0.0.109

- Fixed some issues in the presolve that may occur on numerically hard problems.

5.0.0.108

- Fixed a bug in the mixed integer optimizer occuring when the continuous solution is requested.

5.0.0.107

- Fixed problem in the LP writer.

- Fixed a bug in the simplex optimizer occuring when the problem is dualized.

5.0.0.106

- Fixed problem in the LP writer occuring on problems having afixed term in the objective.

5.0.0.105

- Fixed problem in the primal simplex optimizer.

- Fixed problem in the OPF file write.

5.0.0.104

- Improved the performance on the simplex hotstart.

- Fixed problem when try try write files using MOSEK on .NET and the file name contains special characters such as Chinese chars.

5.0.0.103

- Fixed a bug occuring in `MSK_remove`. The problem only occured on integer problems where one or more variables are removed.

5.0.0.102

- Fixed a cosmetic error occuring in the log output of the conic optimizer.

5.0.0.101

- Fixed a bug occuring on nonlinear problems with nonlinear constraints.

- MOSEK no longer links with libunwind on linux64x86.

5.0.0.100

- Fixed a bug in `getsolutionslice` occuring on conic problems.

5.0.0.99

- Fixed a problem in the Python API.

- Fixed a fatal error that can occur when hotstarting the simplex optimizers and the problem contains free constraints.

5.0.0.98

- Fixed a performance issue occuring when writing very large OPF files.

5.0.0.97

- Fixed a bug that occured when appending constraints to conic problem after the first optimization.

5.0.0.96

- Fixed a performance issue in the mixed integer optimizer.

5.0.0.94

- Fixed a bug in the mixed integer optimizer.

5.0.0.93

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

- Fixed a bug in the OPF reader.

5.0.0.92

- The cone infeasibility was not reported on conic mixed integer problems. It has been fixed.

- Fixed a stability issue in the primal simplex optimizer.

5.0.0.91

- Fixed a bug in the conic optimizer.

5.0.0.90

- Fixed a problem that occured on some infeasible problems. The bug made MOSEK report an invalid infeasibility certificate.

5.0.0.89

- Fixed a bug that uninitialised reads. This only occured for linear problems when they were dualized.

- Fixed a problem in the code that detetcs the CPU type and the cache sizes.

5.0.0.88

- Fixed several bugs in the mixed integer optimizer.

- Fixed a bug that occured when multiple threads are employed and conic problems are solved.

5.0.0.87

- Fixed a bug in the linear dependency checker.

5.0.0.86

- Improved dense columns handling in te interior-point optimizers.

- Fixed a bug in the Java interface. Occurs only if `putlicensedefaults` are employed.

5.0.0.85

- Fixed a bug in the AMPL interface that affects nonlinear problems.

- Fixed a bug that occured if name of constraint, variable or a cone is inputted twice. It some cases it would be corrupted on the second input.

- Fixed a bug in the Python API that caused a memory leak.

5.0.0.84

- Implemented a workarround for a bug in the Intel C compiler. The bug caused the interior-point optimizer to perform badly in certain cases.

- Fixed a bug in the LP file write that occurs when there is fixed term in the objective that is represented as a variable.

5.0.0.83

- Fixed a bug in the presolve.

5.0.0.82

- Fixed a bug in the mixed integer optimizer.

5.0.0.81

- Fixed a bug in the mixed integer optimizer.

5.0.0.80

- Fixed a bug in the mixed integer optimizer.

5.0.0.79

- Fixed a bug in the Java API causing SCopt to be disabled.

5.0.0.78

- Fixed several bugs in the mixed-integer optimizer.

5.0.0.77

- Fixed a bug in the primal simplex optimizer.

- Fixed several bugs in the mixed-integer optimizer.

5.0.0.76

- Fixed a formatting error in the dual infeasibility report.

5.0.0.75

- Fixed a bug in the postsolve occuring on primal or dual infeasible problems.

5.0.0.74

- Fixed a bug in the dual simplex affecting the phase 1 part.

- Fixed a bug in the LU update.

- Fixed a bug that could cause is small change in the problem data when employing the simplex optimizers.

5.0.0.73

- Removed some unneeded debug output.

- Fixed a bug in the OPF reader.

- Fixed a bug that in rare cases triggered an assert in the basis identification on numerical hard problems.

5.0.0.72

- Fixed a bug in the presolve.

5.0.0.70

- Fixed a bug in the factorization algorithm. This affected the interior-point optimizers in verey rare cases.

5.0.0.69

- It is now possible to obtain classical sensitivity information for linear problems in AMPL.

5.0.0.68

- A bug in dual simplex optimizer has been fixed. In rare cases the bug caused the initial basis to be corrupted and resulted in numerical issues.

- Fixed a bug that occurs in presolve on certain nonlinear problems having nonlinear constraints.

5.0.0.67

- Fixed several bugs in the mixed-integer optimizer.

- The setup information for the MAC OSX platform has been updated.

5.0.0.66

- Fixed several problems in the presolve and in the postsolve.

- Fixed a problem that in the extreme case made MOSEK uses large amounts of memory. This would only occur if variables are added incrementally.

- Fixed an issue with construction of initial integer feasible solutions that could cause a feasible solution not to be recognized as such.

5.0.0.65

- Fixed a problem in the LP reader that occurs on certain quadratic problems.

5.0.0.64

- Fixed a problem in the LP reader and writer.

- Updated the mixed integer optimizer.

5.0.0.63

- Fixed a bug that made the interior-point optimizers run slower on some Intel based platforms.

5.0.0.62

- Fixed a bug in the mixed-integer optimizer that occurs for certain conic problems.

5.0.0.61

- Fixed a bug that occured in the presolve in very rare cases.

5.0.0.60

- The Python is now build with the indicated Python version.

5.0.0.59

- Fixed a bug in the presolve. The bug only occurs in very rare cases.

- The scaling procedure applied to linear problems before applying the simplex optimizers has been changed slightly.

- A performance bug in the anti degeneration procedures of the simplex optimizers has been fixed.

- Fixed a bug in the concurrent optimizer that made return an invalid return code in certain cases.

- Fixed a bug causing the simplex optimizer to enter a infinite loop in rare cases.

- Improved performance for certain nonlinear problems.

- Fixed a bug that occurs on all quadratic problems.

- Fixed problem that caused that conic mixed integer problems couldnot be solved in MATLAB.

- The solution solutions was not be written to a mbt for problems have conic constraints.

- The function `MSK_checkversion` would segfault in certain cases.

5.0.0.57

- Fixed a few minor issues in the concurrent optimizer.

5.0.0.56

- Fixed a bug in the matrix reordering employed by the interior-point optimizer.

5.0.0.55

- Fine tuned the log information.

- Updated the manuals.

5.0.0.54

- Improved the stopping criteria for quadratic problems.

5.0.0.53

- Fixed a bug that could cause a crash in the interior-point optimizer.

5.0.0.52

- Fixed several issues in the simplex hotstart that in certain cases caused poor performance.

- Fixed a problem in the `chgbound` function. If the lower and upper bound are identical it changes the bound key to fixed.

5.0.0.51

- Fixed a bug in the mixed integer optimizer.

5.0.0.50

- Fixed a bug occuring in the postsolve in very rare cases.

- Fixed a few cosmetic issues.

5.0.0.49

- Fixed a that would make MOSEK crash AMD Athlon CPUs that does not support SSE2 instructions.

- Fixed a issue with wrong logout when the simplex optimizers is employed.

5.0.0.48

- Fixed a bug in the mixed integer optimizer.

- The mixed integer optimizer is now capable of using the concurrent optimizer on the root node as expected.

5.0.0.47

- Fixed a problem that occured when the -min or the -max command line option is used the MOSEK command line tool.

- Fixed a bug that caused the problem status not to be reported correctly for the basic solution. This occurs only for dual infeasible problems when the presolve is turned off.

5.0.0.46

- Fixed a bug occuring in the simplex optimizers occuring on numerical unstable problems.

- Changed the presolve a bit on mixed integer problems.

5.0.0.45

- Fixed a bug occuring when appending a cone to a problem.

5.0.0.44

- Fixed bug occuring when hotstarting the simplex. It happens only in special cases.

- Fixed a bug in the LP reader occuring on quadratic problems.

- Fixed a problem in the .NET interface that could cause a memory leak.

5.0.0.42

- Fixed bug that can cause a crash when adding cones and variables incrementally to a problem.

- Improved error messages in the Matlab Toolbox function `linprog`.

5.0.0.41

- Improved the simplex optimizers for large scale problems. In particular in certain cases memory was reallocated too often.

- Improved the conic optimizer.

5.0.0.40

- Switched from beta to release candidate status.

- Fixed a bug that occurs when a conic problem is maximized.

5.0.0.39

- Improved the manuals.

5.0.0.38

- Fixed an issue affecting the ordering employed in the interior-point optimizer.

5.0.0.33

- Fixed a bug occuring when hotstarting the simplex optimizers.

5.0.0.30

- Fixed a in bug the LP reader occuring when one or more variables have upper bounds in the bound section.

5.0.0.29

- Fixed some bugs related to thread safety.

- Implemented several workarrounds for problems in Flexlm.