



# The TOMNET Optimization Environment

For fast and robust large-scale optimization in .NET<sup>®</sup>

The TOMNET Optimization Environment is a standardized platform for operations research and applied optimization in Microsoft .NET. A solver-independent design introduces full flexibility in solving large-scale nonlinear data fitting, transportation, planning problems and much more.

- A uniform approach to solving optimization problem
- Automatic gateway routines for format mapping to different solver types
- Over 20 different algorithms for linear, discrete, global and nonlinear optimization
- A large number of fully integrated Fortran and C solvers
- Numerical differentiation for derivatives, warm start for recursive runs
- Over 500 test cases with source code and quick guide examples
  
- Easy installation with InstallShield<sup>®</sup> for Windows users
- Demo licenses with no solver limitations
- Graphical interface for running large test sets
- Advanced support by our team of developers in Sweden and the USA

« TOMNET is available for all Windows 32-bit users. »  
« Continuous solver upgrades and customized implementations. »  
« Embedded solvers and deployed applications. »

For more information, please visit <http://tomopt.com/tomnet> or email [tomlab@tomopt.com](mailto:tomlab@tomopt.com)

## The TOMNET product family:

### **TOMNET /BASE v1.0**

The TOMNET Base Module includes 2 solvers, routines for problem setup, GUI and other tools. Solvers for global optimization, linear/mixed-integer and quadratic programming are available.

Most popular features include:

**glcDirect** - Modified Fortran implementation of the DIRECT method

**milpsolve** - Mixed-integer solver. Also handles linear problems efficiently

**slssolve\*** - Sparse Least Squares with nonlinear constraints

\* Indicates that it requires a nonlinear subsolver



**-- Linear, Mixed-Integer, Quadratic, Mixed-Integer Quadratic Programming --**  
**-- Mixed-Integer Quadratic with Quadratic Constraints --**

### **TOMNET /CPLEX v10.0**

ILOG's state-of-the-art CPLEX simplex and barrier LP, QP, MIP, MIQP and MIQQ solvers. Supports logical constraints. The TOMNET package gives the LabVIEW user full control of this powerful suite. Parallel processing on up to 64 processors is available.

**-- Nonlinear Programming --**

### **TOMNET /MINOS v1.0**

Solvers from Stanford Systems Optimization Laboratory and UC San Diego for large-scale sparse nonlinear programming (MINOS), and dense LP and QP (QPOPT).

### **TOMNET /SNOPT v1.0**

Solvers from Stanford Systems Optimization Laboratory and UC San Diego for large-scale sparse nonlinear programming (SNOPT, MINOS) and sparse or dense LP and QP (QPOPT, SQOPT).

### **TOMNET /NPSOL v1.0**

Solvers from Stanford Systems Optimization Laboratory and UC San Diego for large-scale dense or sparse nonlinear programming (NPSOL<sup>®</sup>, MINOS), dense LP and QP (QPOPT), and linear and nonlinear least squares (LSQR, LSSOL, NLSSOL) problems.

### **TOMNET /SOL v1.0**

Solvers from Stanford Systems Optimization Laboratory and UC San Diego. The package includes TOMNET /MINOS, TOMNET /SNOPT and TOMNET /NPSOL.

### **TOMNET /KNITRO v5.0**

Industry-standard sparse nonlinear interior point solver efficiently integrated in TOMNET. KNITRO implements a novel algorithm for nonlinear programming. The algorithm belongs to the class of interior (or barrier) methods, and uses trust regions to promote convergence. An active-set solver is also included. In cooperation with Ziena Optimization Inc.

**-- Global Optimization --**

### **TOMNET /LGO**

Integrated solver suite for general constrained (global and local) optimization. LGO solver options include branch-and-bound, adaptive stochastic global search, stochastic multistart based global search, and reduced gradient local search modules. LGO is developed and maintained by Pintér Consulting Services, Inc.

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