

# Hexaly Optimizer, a new kind of global optimization solver

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Hexaly Optimizer is a new kind of global optimization solver. Its modeling interface is nonlinear and set-oriented. In a sense, Hexaly APIs unify and extend modeling concepts from mixed-linear programming, nonlinear programming, and constraint programming. Under the hood, Hexaly combines various exact and heuristic optimization methods, such as branch-and-bound, automatic Dantzig-Wolfe reformulation, column and row generation, propagation methods, local search, direct search, and surrogate modeling techniques.

Regarding performance benchmarks, Hexaly distinguishes itself against the leading solvers in the market, like Gurobi, IBM Cplex, and Google OR Tools, by delivering fast and scalable solutions to Routing, Scheduling, Packing, Clustering, and Location problems.

This talk will introduce our set-based modeling formalism and show its scalability for large instances. We will then explore how the solver can use this formalism to automatically use state-of-the-art resolution techniques from the exact and heuristic fields.