



IBM ILOG CPLEX Optimization Studio

Transform Decisions with Advanced Optimization



Overview

IBM® ILOG® CPLEX® Optimization Studio enables organizations to solve complex business problems by transforming them into mathematical models. Leveraging over 25 years of optimization expertise and deployments in 100+ countries, it uses advanced algorithms to deliver optimal solutions in record time—empowering businesses to reduce costs, improve efficiency, and make fact-based decisions.

Key Capabilities

- Massive Scale – Supports millions of decision variables and constraints without model size limits (hardware-dependent).
- Rapid Solve Times – Optimal solutions delivered in seconds to minutes, even for large-scale models.
- Multiple Solver Engines –
 - CPLEX Optimizer – Linear Programming (LP), Mixed-Integer Programming (MIP), and Mixed-Integer Quadratic Constrained Programming (MIQCP).
 - CP Optimizer – Constraint-based scheduling, resource allocation, and non-linear constraints.
- Flexible Modeling – Create models using OPL or APIs in C, C++, Java, C#, Python.
- Real-Time Adaptability – Interactive models that instantly adjust to changing business data and market conditions.
- Cloud & On-Premise Deployment – Solve locally or via IBM Cloud with REST APIs for global scalability.

PERFORMANCE & EFFICIENCY

- Handles terabyte-scale datasets without compromising accuracy or solve speed.
- Up to 90% reduction in solve times compared to traditional optimization tools.
- Capable of solving models with over 1 billion decision variables on high-performance hardware.
- Delivers solutions in under 60 seconds for many real-time operational scenarios.
- 4× more adoption by INFORMS Edelman Prize finalists than competing solutions.
- Reduces manual decision-making time from days to minutes, enabling rapid market adaptation.
- Consistently achieves cost savings of 10–30% in logistics, manufacturing, and energy sectors.
- Improves asset utilization by up to 25%, increasing ROI from existing resources.
- Cuts carbon footprint by optimizing transport and energy schedules for sustainability targets.
- Parallel and distributed solving for maximum performance in cloud or HPC environments.

Deployment Options:

- Embedded APIs in enterprise software
- IBM Decision Optimization Center
- IBM Cloud Decision Optimization
- IBM SPSS® Modeler integration

