

Gurobi 9.1 Performance Benchmarks



GUROBI
OPTIMIZATION

The World's Fastest Solver

Thank You for Your Interest in Gurobi



The Gurobi Optimizer was designed from the ground up to be the fastest, most powerful solver available for your MIP (MILP, MIQP, and MIQCP), LP, QP and QCP problems.

- In industry standard public benchmark tests Gurobi has the...
 - Fastest overall solve times for MIP models
 - Fastest overall solve times for LP models
 - Fastest overall solve times for QP models
 - Fastest overall solve times for QCP models

And, as problems get harder, our relative performance gets even better.

Benchmark Testing

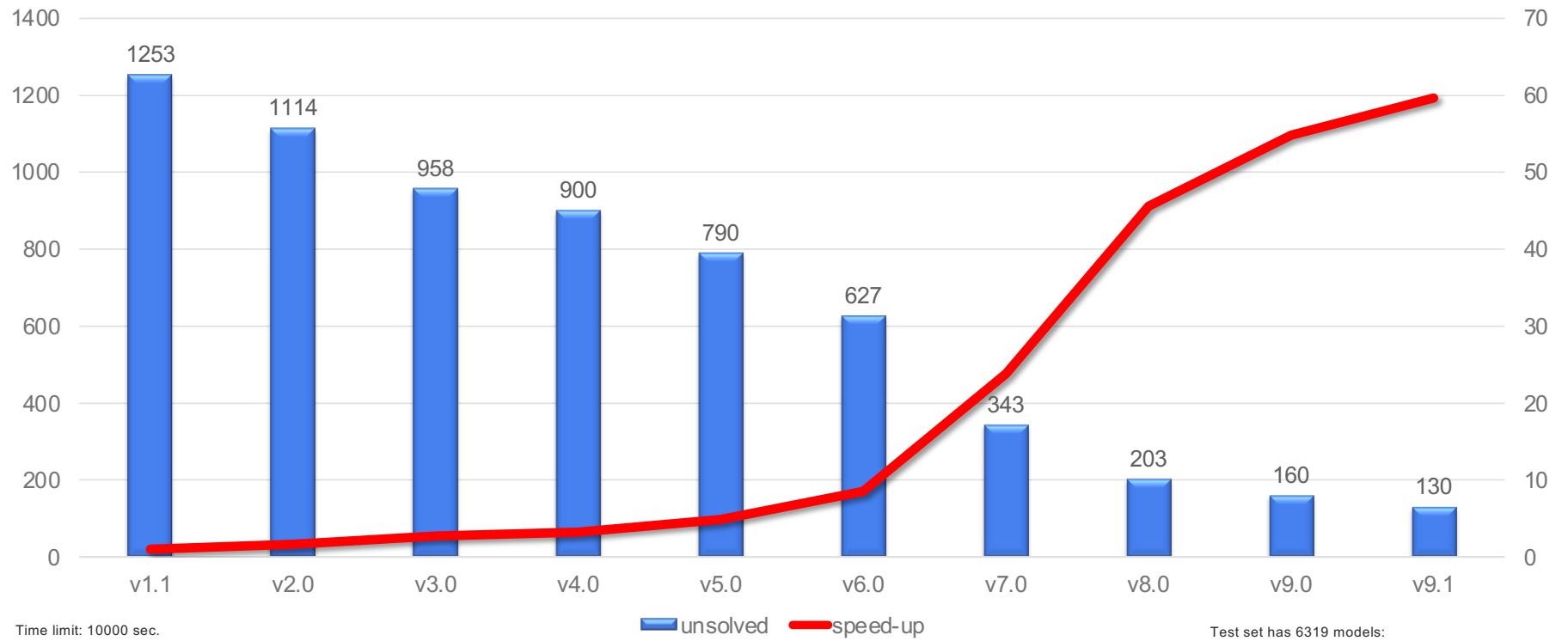
- **Primary Objectives**
 - Robustness testing
 - Compare version-to-version improvements
- **Test Bank**
 - Internal library of over 10,000 models from industry and academia

On the next slides we'll share some specific results from our own internal testing. Of course, every model is different, so we invite you to [try Gurobi for yourself](#) or [contact us](#) with any questions.

Gurobi Keeps Getting Better



Comparison of Gurobi Versions (PAR-10)



Time limit: 10000 sec.
Intel Xeon CPU E3-1240 v5 @ 3.50GHz
4 cores, 8 hyper-threads
32 GB RAM

Test set has 6319 models:
- 550 discarded due to inconsistent answers
- 1612 discarded that none of the versions can solve
- speed-up measured on >100s bracket: 2346 models

Faster Than Ever



With Gurobi 9.1, the Gurobi Optimizer – which was tested using Gurobi’s test library comprised of thousands of real-world models – registered notable performance improvements across multiple problem types including:

- **Primal simplex:** 17% faster overall, 37% faster on models that take at least 100 seconds.
- **Dual simplex:** 29% faster overall, 66% faster on models that take at least 100 seconds.
- **Barrier:** 15% faster overall, 34% faster on models that take at least 100 seconds.
- **Mixed-integer linear programming (MILP):** 5% faster overall, 9% faster on models that take at least 100 seconds.
- **Convex mixed-integer quadratic programming (MIQP):** 5% faster overall, 20% faster on models that take at least 100 seconds.
- **Convex mixed-integer quadratically constrained programming (MIQCP):** 13% faster overall, 57% faster on models that take at least 100 seconds.
- **Non-convex mixed-integer quadratically constrained programming (non-convex MIQCP):** 4x faster overall, 9x faster on models that take at least 100 seconds.
- **Irreducible Infeasible Set (IIS) computation:** 2.6x faster overall, 5.7x faster on models that take at least 100 seconds.
- **Better MIP feasible solutions:** Heuristics are significantly better at finding high-quality solutions earlier.

Isn't it time you considered upgrading to Gurobi?



- You can get a free academic license at www.gurobi.com/academia
- You can request a free commercial evaluation license by contacting us at: info@gurobi.com.
- We are happy to help you benchmark your models with Gurobi v9.0. Please [submit a Gurobi support ticket](#) to get started.