

GAMS



GAMS

Benchmarking

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Multiple Solver & Model Types

Solver/Model type availability - 22.5 June 1, 2007												
	LP	MIP	NLP	MCP	MPEC	CNS	DNLP	MINLP	QCP	MIQCP	Stock.	Global
ALPHAECF								✓		✓		
BARON 7.8	✓	✓	✓				✓	✓	✓	✓		✓
BDMLP	✓	✓										
COIN	✓	✓										
CONOPT 3	✓		✓			✓	✓		✓			
CPLEX 10.2	✓	✓							✓	✓		
DECIS	✓										✓	
DICOPT								✓				
KNITRO 5.1	✓		✓				✓		✓			
LINDOGLOBAL 4.1	✓	✓	✓				✓	✓	✓	✓		
LGO	✓		✓				✓		✓			✓
MILES				✓								
MINOS	✓		✓				✓		✓			
MOSEK 4	✓	✓	✓				✓		✓	✓		
MPSGE												
MSNLP			✓				✓		✓			✓
NLPEC				✓	✓							
OQNLP			✓				✓	✓	✓	✓		✓
OSL V3	✓	✓										
OSLSE	✓										✓	
PATH				✓		✓						
SBB								✓		✓		
SNOPT	✓		✓				✓		✓			
XA	✓	✓										
XPRESS 17.10	✓	✓							✓			
Contributed Plug&Play solvers												
AMPLwrap	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
DEA	✓	✓										
Kestrel	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓



GAMS/Bench

- Tool to help facilitate benchmarking of GAMS solvers
- Compares resource usage of solvers selected
- Creates problem matrix once and gives it to all solvers
- Can create trace files used for visualization
- Can call GAMS/Examiner to verify correctness of solutions
- Comes free with every GAMS system



GAMS/Examiner

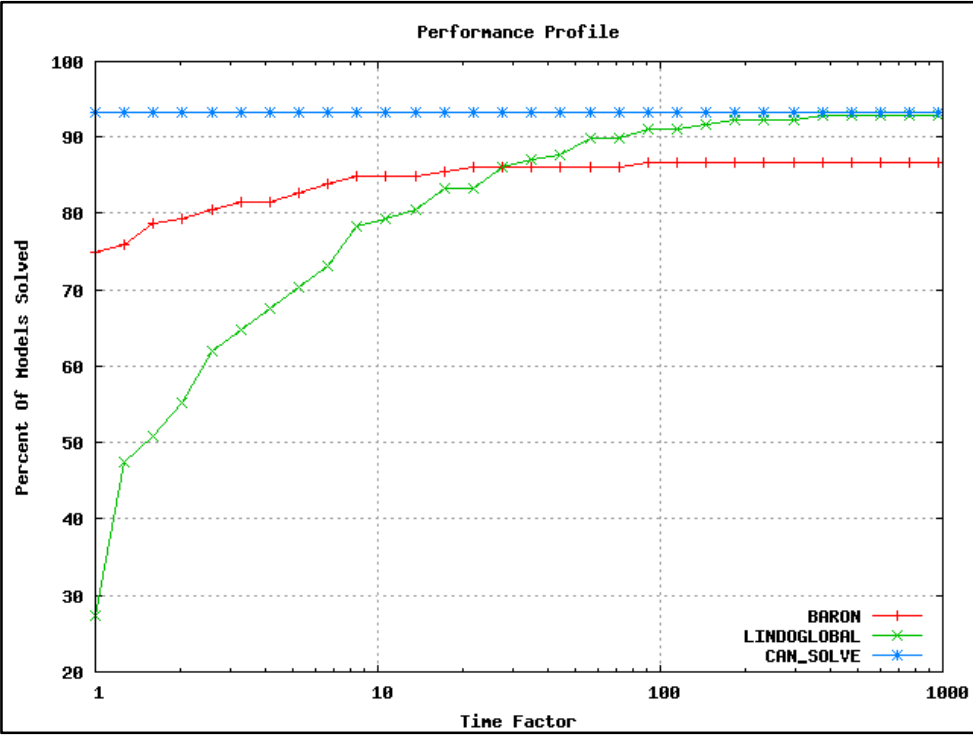
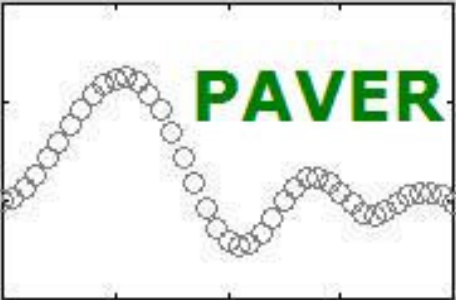
- Purpose: to make an unbiased, independent report on the merit of points
- Points may come from GAMS or a solver
 - GAMS passes the previous solution as initial iterate
 - Solvers pass solutions back to GAMS
- Useful during solver debugging
 - Helps to pinpoint problems
 - Most checks are obvious
- Does checks on the scaled and unscaled/original model
- All solution tolerances can be adjusted, default is tight
- Different points can be checked
- Examiner only *reports*, it doesn't *fix*



Benchmark online - www.gamsworld.org

PAVER – Server

Performance Analysis and Visualization
for Efficient Reproducibility





Hands-on! "Solver" Bench

gamside: C:\Documents and Settings\Jan\My Documents\presentation\2007-07-EURO-Prag\softdemo\bench\bench.gpr

File Edit Search Windows Utilities Help

lp=bench optfile=1

IDE c:\documents and settings\jan\my documents...

transport.gms transport.lst

No active process

transport

```

--- BENCH SUMMARY:

```

Solver	Modstat	Solstat	Objective	ResUsd	Examiner
CPLEX	1	1	153.6750	0.078	P/P
COINCBC	1	1	153.6750	0.000	P/P
COINGLPK	1	1	153.6750	0.000	P/P
MOSEK	1	1	153.6750	0.062	P/P
XPRESS	1	1	153.6750	0.062	P/P

```

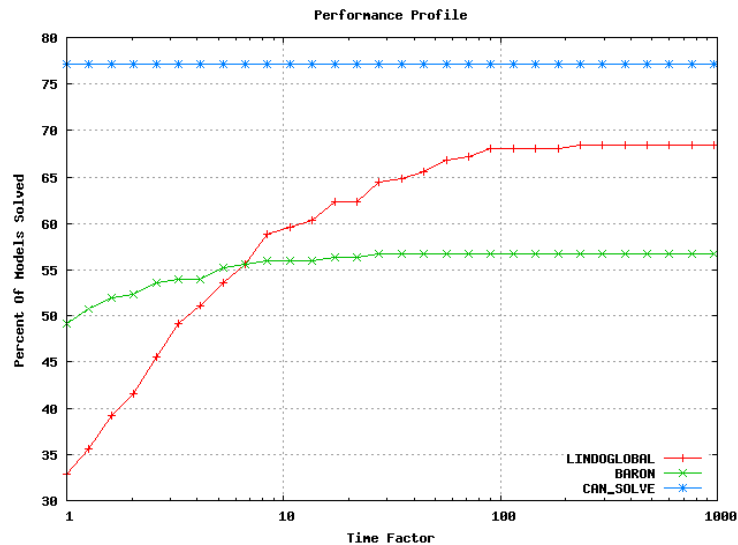
--- Restarting execution
--- transport.gms(66) 0 Mb
--- Reading solution for model transport
--- Executing after solve
--- transport.gms(68) 3 Mb
*** Status: Normal completion
--- Job transport.gms Stop 07/03/07 11:39:46 elapsed 0:00:02.500

```

Close Open Log Summary only Update



PAVER: LINDOGlobal vs. BARON



- Tested complete MINLP Library (250 models)
- Time limit: 600 sec per model
- Optimality tolerance: 0
- BARON can solve 125 models to optimality, found a feasible solution for additional 40 model
- LINDOGlobal solved 131 models to optimality, found a feasible solution for 60 more models
- Both together: 141 optimal and 53 feasible models



Sources of GAMS Information

Download: <http://download.gams-software.com/>

Release Notes: <http://www.gams.com/docs/release/release.htm>

Contributed Documentation: <http://www.gams.com/docs/contributed>

Contributed Software: <http://www.gams.com/contrib/contrib.htm>

Presentations: <http://www.gams.com/presentations>

Workshops: <http://www.gams.com/courses.htm>

Bruce McCarl's Newsletter: <http://www.gams.com/maillist/newsletter.htm>

GAMS User Group: http://www.gams.com/maillist/gams_1.htm

GAMS Google Group: <http://groups.google.de/group/gamsworld>

Other relevant sites on the Web: <http://www.gams.com/hotlinks.htm>



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