

Bruce McCarl's GAMS Newsletter Number 5

CPLEX 7 and Dual - Update

Thanks to John Gregory and others at CPLEX I was able to resolve problems I was having with CPLEX 7. I found out that big performance declines can be caused by the existence of artificially large upper bounds particularly on the objective function and the new CPLEX feature that on restarts it automatically goes to the dual simplex algorithm. Namely to find unboundedness at some point I put in the bound $\text{profit.up}=10000000$; If you find restarts (second and subsequent solves) to be very slow then remove such bounds (removal causes a reduction in solution time from hours to seconds). You also could use the CPLEX option file options

```
lpmethod 1
pdswitch 1
startalg 1
```

GAMSWORLD

GAMS corporation has worked with others to create a new web site called <http://www.gamsworld.org/>. This web site contains quite a lot of material on Mixed Integer Nonlinear Programming (MINLP) but also has material on conversion to other languages such as AMPL and MPS format. A link to NEOS through the converter section (GAMS2XX) also allows one to submit jobs for solution on the NEOS computers.

Presentations and Papers

GAMS has recently introduced a presentations and contributed documentation web page on <http://www.gams.com/presentations/>. Look there for papers on GAMS use and some instructional materials including some of the things I generated for past newsletters. Also see the Erwin Kalvelagen report on solving large MIP's with CPLEX on http://www.optimization-online.org/DB_HTML/2001/06/352.html.

Basic Learning Material

Basic material appears, among other places, in the Rosenthal section in the GAMS manual or on <http://www.gams.com/docs/gams/Tutorial.pdf>; in the primer by Rob Delink and Judit Szönyi on <http://www.sls.wau.nl/enr/>; in McCarl and Spreen Chapter 5 <http://agecon2.tamu.edu/people/faculty/mccarl-bruce/mccspr/new05.pdf>; in basic materials by me on <http://www.gams.com/mccarl/aggamint.pdf>; or Rardin's <http://gilbreth.ecn.purdue.edu/~rardin/gams/notes.html>. CGE materials are on Rutherford's <http://debreu.colorado.edu/mainpage/mpsge.htm>, on the GAMS presentations web page within documents by Loftgren, Delink and Szönyi; on the MPSGE page <http://www.gams.com/solvers/mpsge/>. Other materials are on <http://www.gams.com/presentations/> including ones in Russian and Spanish.

Courses offered

I teach **Basic GAMS** in College Station, Texas November 5-8, 2001 (note this is a change from the earlier announced time) and **Advanced GAMS** in Texas in January 7-10, 2002. Further information and other courses are listed on <http://www.gams.com/courses.htm>.

Links to Other Programs - Spreadsheets, Databases

A topic of interest to many is the link between GAMS and other programs. I will be covering such topics here and in subsequent newsletters. For now I provide a document on how to develop an EXCEL spreadsheet that runs GAMS in the background. The

document is on <http://www.gams.com/mccarl/excelgams.pdf> and the associated spreadsheet and GAMS file are on <http://www.gams.com/mccarl/excelgams.zip>. Later look for material on links when GAMS is in charge, Delphi, databases, graphics programs and put files. Also see the general treatment covering spreadsheets, databases in <http://www.gams.com/interface/interface.html>, Tom Rutherford's graphics and spreadsheet tools on <http://debreu.colorado.edu/inclib/tools.htm> or Uwe Schneider's graphics tools on <http://agecon2.tamu.edu/people/faculty/mccarl-bruce/gnuplot/gnuplot.html>.

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