

# Bruce McCarl's GAMS Newsletter Number 12

## New Release - GAMS 21.0

GAMS Corporation has just released version 21.0 of GAMS. The main features visible to the user (a lot of work was done on internal handling of functions) are several bug fixes, a few language enhancements, documentation enhancements, IDE enhancements, GDX enhancements, solver upgrades and some new solvers.

**Bug fixes** involve repairs in a couple of GAMS features plus GAMS BAS, GAMSCHK, GDXXRW, XLIMPORT, XLEXPOR and XLDUMP. If you have had unresolved problems with those in the past you might want to try them again. The release notes elaborate at <http://www.gams.com/docs/release/release.htm>.

**Language enhancements** involve the ability to specify a multidimensional set via a table as discussed in the Sets chapter of the McCarl documentation and uses syntax like

```
set Table Linkedbyroad3(origins,destinations) Places linked by roadways
      Portland London Houston
"NEW York"  yes                yes
boston     yes                No    yes;
```

**Documentation enhancements** involve the update of the solver guides, the integrated system release of the McCarl User Guide as discussed in the last newsletter (<http://www.gams.com/mccarl/newsletter/news11.htm>) and new documentation access features through the Help menu in the IDE.

**IDE enhancements** involve the afore mentioned help path to documentation, inclusion of a GDX differencing utility; development of GDX viewing capability as discussed in the McCarl User Guide chapter on Using GAMS Data Exchange or GDX Files under the Identifying GDX file contents section; and improved memory of window sizes.

**GDX enhancements** involve the afore mentioned IDE viewer plus the capability to pass selected attributes of variables and equations like solution levels or marginals.

**Solver upgrades:** A new version of CPLEX (8.1) is now available that has new QP, MIP, MIQP and Parallel computer LP solving capabilities as discussed in [http://www.gams.com/docs/release/rel\\_cplex.htm](http://www.gams.com/docs/release/rel_cplex.htm). CONOPT3 is now the default version with its improved scaling features among other items. OSL3 is now the default version with its improved memory management, simplex, and barrier solvers. MINOS, SNOPT, PATH, and XPRESS have all been updated - see the release notes at <http://www.gams.com/docs/release/release.htm> for details.

**New Solvers** are available for purchase including: Global optimizers for general NLP and MINLP problems including BARON, LGO and OQNLP. MOSEK is now available, as is NLPEC, the first solver shipped for MPEC problems (Math Programs with Equilibrium Constraints). NLPEC automatically reformulates the MPEC model as an NLP, solves the NLP, and recovers the MPEC solution. All of these but NLPEC are subjects of solver manuals accessible through the IDE help.

## **Did you know:**

The new documentation explains a lot of things not previously covered so here I point a few out.

Through use of GDX utilities you can use an EXCEL spreadsheet to create graphics images. You can also use spreadsheet capabilities to do numerical procedures not in GAMS like estimation of a regression. All are illustrated in the documentation chapter on Links to Other Programs Including Spreadsheets in the sections on Spreadsheet graphics and Interactively including results.

## **Courses offered**

I will teach [Advanced GAMS](#) in Hamburg Germany, June 10-13, 2003 and in Texas January 12-15, 2004. A basic course will be scheduled for May, 2004. Further information and other courses are listed on <http://www.gams.com/courses.htm>.

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