

## Bruce McCarl's GAMS Newsletter Number 14

### GAMS 21.3 beta release

GAMS Corporation has recently released version 21.3 in beta format but continues to ship 21.2. Version 21.3 expands some language capabilities. Release notes are on the GAMS web site at [http://www.gams.com/docs/release/release\\_beta.htm](http://www.gams.com/docs/release/release_beta.htm). New features within this release are:

#### Model types

New Quadratic model types have been introduced These are

<b>QCP</b>	Models that have quadratic terms in the objective function and in the constraints.
<b>MIQCP</b>	QCP models that also have integer variables.
<b>RMIQCP</b>	QCP models that also have integer variables that are solved with the integer variable restrictions relaxed.

The problems can be solved by NLP, MINLP and RMINLP solvers plus CPLEX, MOSEK and XPRESS. Consult the IDE solver choice list for capability. Also note some of the solvers can only handle quadratic terms in the objective function. GAMS will check the problem against solver capability and message the user if the problem cannot be accommodated.

#### Basis file developments

A new procedure saves and loads a basis using GDX files. The procedure is discussed in a set of notes entitled Using a GDX Point Advanced Basis that is available on the web at [pointbasis.pdf](#). This procedure makes GAMS BAS obsolete.

#### Faster operation under multiple solves

GAMS can now be told to remain open during execution of a solve. This procedure saves the time that GAMS would use in closing down before a solve and reopening afterwards. On the other hand additional memory is required. This option is best for jobs that have a large data set and solve many small models as in that case one sacrifices memory but avoids the overhead of many GAMS saves and restarts. This is implemented by using the option SOLVELINK that can appear on the command line, as a model attribute or as an internal option statement. In all cases solveopt is set to an integer value and the integer value can be

- 0** in which case GAMS operates as it has for years (default)
- 1** in which case the solver is called from a shell and GAMS remains open.
- 2** in which case the solver is called with a spawn (if possible as determined by GAMS) or a shell (if the spawn is not possible) and GAMS remains open.

#### Unraveling complex programs

When running a complex model one may wish to know if there are items defined in the program that are not used and if so what are they and where are they and also given an item in what files is it defined, declared and used in. A program is now included in the GAMS IDE to help resolve these issues. The procedure is discussed in a set of notes entitled REFREADER: A PC program to unravel a complex GAMS model that is available on the web at [unravel.pdf](#).

### **GAMS looking for Beta testing partners**

GAMS has decided to revise its release policies at least for now. In particular GAMS now has a release mailing list that notifies users of new releases and makes a beta download available. The beta download can even work with an expired license file for up to two months from the beta release date. Users wishing to join the release list should go to the GAMS web site at [releases\\_list.htm](#). Problems with the beta can be reported to [betatest@gams.com](mailto:betatest@gams.com).

### **Courses offered**

I will teach Advanced GAMS in College Station, Texas January 12–15, 2004 and Basic GAMS in May or June 2004. Further information and other courses are listed on <http://www.gams.com/courses.htm>.

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