Bixby, Robert E.; **Gregory, John W.**; **Lustig, Irvin J.**; **Marsten, Roy E.**; **Shanno, David F.**
Very large-scale linear programming: A case study in combining interior point and simplex methods. (English) Zbl 0758.90056
Oper. Res. 40, No. 5, 885-897 (1992).

Summary: Experience with solving a 12,753,313 variable linear program is described. This problem is the linear programming relaxation of a set partitioning problem arising from an airline crew scheduling application. A scheme is described that requires successive solutions of small subproblems, yielding a procedure that has little growth in solution time in terms of the number of variables. Experience using the simplex method as implemented in CPLEX, an interior point method as implemented in OB1, and a hybrid interior point/simplex approach is reported. The resulting procedure illustrates the power of an interior point/simplex combination for solving very large-scale linear programs.

MSC:

90C05 Linear programming
90C06 Large-scale problems in mathematical programming

Keywords:

relaxation of a set partitioning; airline crew scheduling; simplex method; interior point method; very large-scale linear programs

Software:

CPLEX

Full Text: DOI