Linear Programming Support in Watson Sparse Matrix Package

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The Watson Sparse Matrix Package (WSMP) is a high-performance robust direct solver for both symmetric and unsymmetric large sparse systems of linear equations. Currently, it works in serial, multi-threaded parallel, message-passing parallel, and a combination of message-passing and multi-threaded modes on IBM RS6000 with AIX and IA32 with Linux.

The symmetric solver has features to support barrier methods for solving LP problems. For instance, it provides users a variety of options to deal with small and negative pivots and the loss of rank.

We have recently added support in the unsymmetric solver that enables it to be used in conjunction with the Simplex algorithm and other LP techniques. This includes routines to factor a basis, update rows or columns of a previously factored basis, obtain solutions with respect to the latest updated basis and to obtain and refactor the current basis.

Please visit *http://www.cs.umn.edu/ agupta/wsmp.html* for related technical papers and details on obtaining and using the software.