

# Performance Enhancements on the Sun Platform

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## Abstract

The ANSYS software includes a family of “Enterprise Solutions” for the design and analysis of multiphysical engineering problems. ANSYS products are used for the simulation of structural, thermal, and mechanical effects in a physical model.

The equations governing the multiphysical behavior in the simulations require computationally intensive solutions. At the heart of many of the numerical techniques is a system of sparse linear equations. In some cases, fifty percent of the CPU time can be spent on the solution of these systems. Thus, the sparse solver provides the potential for significant performance enhancements in the overall efficiency of the ANSYS software.

Sun’s Market Development Engineering staff has undertaken a project with developers at ANSYS to investigate alternatives for improving the sparse solvers in the code. The approaches include the BCS sparse solver, the implementation of a sparse solver developed at Sun, and compiler optimization. The results are validated with real applications.