3-D Heat Conduction on a Linux Cluster using PVM

This project will explore the fundamentals of parallel computing on personal computer (PC) clusters running Linux, and using the Parallel Virtual Machine (PVM) software libraries. The focus of this effort will be to solve a multi-dimensional conduction heat transfer problem. The temperature distribution for a 3-D medium can be determined by solving the Laplace Equation in parallel over a distributed decomposition of the data array that represents the medium. PVM is a software package that allows a heterogeneous collection of Unix and/or Windows computers to be connected together by a network and used as a single large parallel computer. Linux was chosen as the operating environment for the PC cluster in this project because Linux is a multitasking virtual memory operating system that directly controls the hardware, leading to more efficient execution and better parallel performance.

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