Performance Aspects On High Performance Computers - From Microprocessors To Highly Parallel SMP Systems

H. Mix, W. E. Nagel

Abstract

With the growing demands in computer-modeling and simulation, the programming conversion techniques for efficient algorithms and procedures must keep up with rapid progress on the instrumental platforms in computer architecture. Beyond moderately parallel vector computers, parallel computers in quit ``massive parallel'' form have been pushing into the market for several years now. In many cases, the efficient use of such parallel computers is not only a challenge to parallel programming but also to the effective utilization of the large performance potential of the microprocessor underneath. Today, in many cases the sustained single PE performance of a large HPC application is in the order of a few percent of the peak speed announced in the advertising of the microprocessor. This still limits the success of such machines especially in large scale environments.

The talk will discuss aspects of programming and optimization in HPC applications on parallel computers. Some emphasis will be placed on supportive software tools.