

High Performance Computing and Trends: Connecting Computational Requirements with Computing Resources

Jack Dongarra

University of Tennessee

Abstract

Today networking, distributed computing, and parallel computation research have matured to make it possible for distributed systems to support high-performance applications, but:

Resources are dispersed,
Connectivity is variable,
Dedicated access is not possible.

In this talk we advocate the ‘Computational Grids’ to support ‘large-scale’ applications. These must provide transparent access to the complex mix of resources — computational, networking, and storage — that can be provided through aggregation of resources. The vision is of uniform, location independent, and transient access to the

Computational,
Catalogued data,
Instrument system,
Human collaborator,

resources of contemporary research activity in order to facilitate the solution of large-scale, complex, multi-institutional/multidisciplinary data and computational based problems. It envisages these resources being accessible through a Problem Solving Environment appropriate to the target community.