

Topic 16

Applications of High-Performance and Grid Computing

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Topic Chairs

The use of parallel computing and distributed information services is spreading quite rapidly, as today's difficult problems in science, engineering and industry far exceed the capabilities of the desktop PC and department file server. The availability of commodity parallel computers, ubiquitous networks, maturing Grid middleware, and portal frameworks is fostering the development and deployment of large scale simulation and data analysis solutions in many areas. This topic highlights recent progress in applications of high performance parallel and Grid computing, with an emphasis on successes, advances, and lessons learned in the development and implementation of novel scientific, engineering and industrial applications.

Today's large computational solutions often operate in complex information and computation environments where efficient data access and management can be as important as computational methods and performance, so the technical approaches in this topic span high performance parallel computing, Grid computation and data access, and the associated problem-solving environments that compose and manage advanced solutions.

This year the 23 papers submitted to this topic area showed a wide range of activity in high performance parallel and distributed computing, with the largest subset relating to genome sequence analysis. Nine papers were accepted as full papers for the conference, organized into three sessions. One session focuses on high performance genome sequence comparison. The second and third sessions present advanced approaches to scalable simulations, including some non-traditional arenas for high performance computing. Overall, they underscore the close relationship between advances in computer science, computational science, and applied mathematics in developing scalable applications for parallel and distributed systems.