Overlay Metacomputers and the Trellis Project

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Abstract:

Aggregating computing resources, often in different administrative domains, is a long-standing goal of distributed systems research. The technical challenges include security, job scheduling, and data management (e.g., file systems). The social challenges include reducing the support burden, and increasing the participation rate, of local systems administrators and users.

The Trellis Project is developing systems software to create overlay metacomputers, which are similar to grids but with an emphasis on requiring the minimal amount of privilege to install, configure, and use. The relative ease with which new systems can be integrated into an overlay metacomputer made it possible to include 19 different universities, 22 different administrative domains, and over 4,000 concurrent jobs for the Third Canadian Internetworked Scientific Supercomputer (CISS-3) experiment in September 2004.

We describe the basics of the Trellis system, its use of the Secure Shell infrastructure, and how global scheduling and a file system can be layered onto the (mostly) user-level software system.

Related URLs:
http://www.cs.ualberta.ca/~paullu/Trellis/

Biography:
Paul Lu is an Associate Professor of Computing Science, University of Alberta, Edmonton, Alberta, Canada. His research interests are high-performance computing, operating systems, and bioinformatics. His M.Sc. (Alberta, 1993) was on parallel alpha-beta search algorithms and his Ph.D. (Toronto, 2000) was on parallel programming systems.