Recent Advances in Trusted Grids and Peer-to-Peer Computing Systems

Kai Hwang

University of Southern California
Los Angeles, CA. 90089 USA

Abstract:

Computational Grids and *peer-to-peer* (P2P) are emerging as two of the most promising distributed computing technologies that may change the world in the next decade. In this talk, Dr. Hwang presents recent advances in network security technologies, cyber trust systems, and integrated solutions for trusted computing over the Internet. The talk covers the integration of web services with P2P Grid computing, new cybertrust models, Internet worm containment, P2P reputation systems, and hybrid defense systems to protect distributed resources from network worms, DDoS attacks or peer intrusions or collusions.

Research findings and benchmark results from the USC GridSec project will be reported for automated trust management to facilitate security binding and defense against worms and DDoS attacks in Grids, P2P systems, and web services. He will assess frontier research topics on fast reputation aggregation for trusted P2P file sharing, security-aware Grid job scheduling, game-theoretic modeling of non-cooperative Grids, new performance metrics, and DETER experiments for cybertrust development. The fortified Grids, P2P systems, and Internet resources will benefit many security-sensitive applications in digital government, e-commerce, distance learning, distributed supercomputing, etc.

Biographical Sketch:

Kai Hwang is a Professor of Electrical Engineering and Computer Science and Director of Internet and Grid Research Laboratory at the University of Southern California. He received the Ph.D. from UC Berkeley in 1972. He is the founding Editor-in-Chief of the *Journal of Parallel and Distributed Computing.* An IEEE Fellow, Dr. Hwang has received numerous research grants and achievement awards. He has lectured worldwide and performed advisory work for NSF, IBM, JPL, MIT Lincoln Lab, Intel scalable systems, ETL in Japan, Academia Sinica in China, and GMD in Germany. Dr. Hwang has published over 200 scientific papers and 7 books. Presently, his research group at USC work on Grid and P2P security for distributed supercomputing. The ultimate goal is to develop dependable, trustworthy, and highly available network-based systems for pervasive P2P and Grid applications. Visit the Project website: **http://GridSec.usc.edu/** for details.