Title: The Gridbus Toolkit for Service-Oriented and Utility Grid Computing

Speaker: Dr. Rajkumar Buyya
Grid computing and Distributed Systems (GRIDS) Laboratory
Dept. of Computer Science and Software Engineering
The University of Melbourne, Australia

Date: 5 Jan 2004, Monday @ 1500 hours

Venue: Seminar Room 3, Evans Building (Ground Floor)
Singapore Management University

Abstract:
Grid computing is emerging as a new paradigm for Internet-scale parallel and distributing computing. It enables the sharing, selection, and dynamic/on-demand aggregation of geographically distributed resources, such as computers (PCs, clusters, supercomputers), databases, application services, and scientific instruments, for solving large-scale problems in science, engineering, and commerce. The construction of applications and management of resources in such large-scale distributed systems is a complex task. This talk identifies Grid synergies, challenges, and opportunities; and presents architectural framework, methodologies, and technologies that are being developed to realise on-demand, service-oriented grid and utility computing. Some Grid technologies and applications that we cite during this presentation include: Globus, Nimrod-G, Gridbus, GridSim, and Virtual Laboratory, and Distributed Drug Discovery, Brain Activity Analysis, and High Energy Physics.

This presentation coverage is as follows. First, we briefly review emerging trends in Internet-based parallel and distributed computing, and identify application development and resource management challenges. Then, we introduce our framework on Service Oriented Grid Architecture for Computational Economies and discuss various Grid technologies being developed or leveraged for its realisation. Particular emphasis will be placed on how to design and develop Grid technologies and applications capable of dynamically leasing services of distributed resources at runtime depending on their availability, capability, performance, cost, and users’ quality of service requirements.

Finally, we present the usage of Grid tools (mainly, Gridbus and Nimrod-G) in composition and distributed execution of data-intensive applications (e.g., molecular docking, brain activity analysis, and high-energy physics) on Global Grids. The presentation concludes by highlighting sociological and intellectual implications of this new Internet-based computing paradigm and its impact on the marketplace.

Speaker Bio:
Dr. Rajkumar Buyya is Founder and Program Leader/Director of the Grid Computing and Distributed Systems (GRIDS) Laboratory in the Dept. of Computer Science and Software Engineering at the University of Melbourne, Australia. He is one of the creators of system software for PARAM Supercomputers developed by the Centre for Development of Advanced Computing (C-DAC), India. He has pioneered economic paradigm for service-oriented grid computing and demonstrated its utility through his contribution to conceptualisation, design and development of Grid technologies such as Nimrod-G, GridSim, and Gridbus.

He has lectured on advanced technologies such as Parallel, Distributed and Multithreaded Computing, Internet and Java, Cluster Computing, Java and High Performance Computing, and Grid computing in many international conferences and institutions. For further information, see - http://buyya.com