

Proceedings

**First IEEE/ACM
International Symposium on
Cluster Computing and the Grid**

CCGrid 2001

Proceedings

First IEEE/ACM International Symposium on Cluster Computing and the Grid

Brisbane, Australia
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Edited by

Rajkumar Buyya, George Mohay, and Paul Roe

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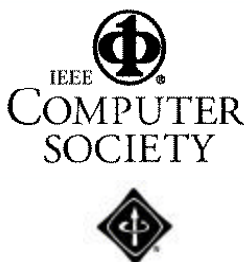


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General Co-Chairs' Message

Welcome to the First IEEE/ACM International Symposium on Cluster Computing and the Grid (CCGrid 2001) sponsored by the IEEE Computer Society's Task Force on Cluster Computing (TFCC) and hosted by the Queensland University of Technology (QUT). The symposium is being held in-cooperation with the Association for Computing Machinery (ACM) Special Interest Group on Computer Architecture (SIGARCH), the IEEE Technical Committee on Parallel Processing (TCPP), and the Society for Industrial and Applied Mathematics (SIAM). The Symposium has received generous support from Platform Computing Corporation, Australian Partnership for Advanced Computing (APAC), MPI Software Technology, International Business Machines (IBM), Akamai Technologies, Sun Microsystems, and Intel Corporation.

CCGrid2001 is a new millennium symposium that has emerged as a follow up and merger of the Asia-Pacific International Symposium on Cluster Computing (APSCC 2000) held in Beijing, China and the International Workshop on Cluster Computing Technologies, Environments, and Applications (CC-TEA) series held in the United States for the past four years (1997-2000). The symposium marks the emergence of a new force for the IT millennium with its technical scope embracing two advanced computing themes, cluster and grid computing, that enable science, engineering, commercial, and communication applications to share resources and contents across the Internet in a peer-to-peer manner. This is evident from the highly encouraging number of original research articles submitted from all over the world for the symposium's mainstream and the associated special events.

The success of the conference is wholly due to the hard work of the organising committee, the publicity chair, special events organizers, and the program and steering committees. In particular, we are grateful to Jack Dongarra (University of Tennessee) and Greg Pfister (IBM Server Technologies Division) for serving as honorary chairs. We thank Wolfgang Gentzsch for serving as symposium vice-chair. The program committee chair, Paul Roe, and vice chairs, David Bader, Mark Baker, Hai Jin, Alexander Reinefeld, and Albert Zomaya, have put in an outstanding effort in organizing the paper reviews and selecting high quality papers. We appreciate their hard work and commitment in formulating an excellent technical program. We would like to say a special thank you to the international program committee members and external reviewers for donating their precious time during the reviewing process. The award committee chaired by Craig A. Lee has identified best paper awards to two innovative papers chosen from the selected papers from the symposium.

We have invited leading experts in specific subject areas to organize special events associated with the symposium. We have eleven special events organized on selected topics within the scope of the symposium. The organizers of these special events were responsible for managing all aspects of their workshops including handling submissions, reviews, and paper selections and formulated their own program and review committees for developing each workshop program. Four of these eleven workshops, which received less than five submissions, have merged their submissions with the mainstream papers. The workshop organizers received 61 submissions and accepted 37 papers after peer-reviews. We express our gratitude to all organizers of special events: Laurent Lefevre, Dan Hyde, Barry Wilkinson, Y.K. Kwok, Mahbub Hassan, Sanjay Jha, Franck Cappello, Spyros Lalis, Rajeev Raje, Barrett Bryant, Omer Rana, Hai Jin, Peter Graham, Rajeev Thakur, Rob Ross, Seng Loke, and Heinz Stockinger and their review/program committee members for their time and effort in developing these special programs on selected topics. Our special thanks to Omer Rana for organizing academic plenary session on software Agents technologies.

We are pleased to feature leading international authorities in high performance network computing as keynote speakers. They are Greg Pfister (IBM Server Technology & Architecture, Austin, USA), Ian Foster (Argonne National Laboratory and University of Chicago, USA), Domenico Laforenza (CNUCE-Institute of the Italian National Research Council), Satoshi Matsuoka (Tokyo Institute of Technology, Japan.), Andrzej Goscinski (Deakin University, Australia.), and Bruce Maggs (Carnegie Mellon University and Akamai Technologies, Inc., USA). We are grateful to all our keynote speakers for accepting our invitation and sharing their innovative ideas with all participants. We have invited experts from both academia and industry to present talks on state-of-the-art topics in plenary sessions. The academic plenary speakers are: Gul Agha (University of Illinois at Urbana-Champaign) and Jeff Bradshaw (Institute for Human and Machine Cognition University of West Florida and BOEING, USA) and the

industry plenary speakers are: Ming Xu (Platform Computing Corporation), Tim Mattson (Intel), Wolfgang Gentzsch (Sun Microsystems), and Tony Skjellum (MPI Softech Inc.).

The staff members at the IEEE Computer Society and the Association for Computing Machinery have helped us cheerfully in a numerous ways. Our special thanks go to Maggie Johnson (conference coordinator, IEEE) and Hilda Rivera (ACM SIG Services) who have been instrumental in sorting out conference sponsorship issues. We thank Alan Berenbaum (ACM SIGARCH Chair), Albert Zomaya (TCPP chair), and Bill Kolata (SIAM Technical Director) for their support in offering in-cooperation status from their respective institutions. We acknowledge the efforts of the IEEE Computer Society Press team, particularly Tom Baldwin (Proceedings Supervisor), Deborah Plummer (Manager Production), and Bob Werner (Proceedings Coordinator) for managing and publishing the proceedings in record time.

We are grateful to John O'Callaghan (Australian Partnership for Advanced Computing), Bess Apostol and Bill McMillan (Platform Computing Corporation), and Tony Skjellum (MPI Softech Inc.), Tim Mattson (Intel), and Wolfgang Gentzsch (Sun Microsystems) for their help in getting sponsorship from their respective organizations. We thank Akamai Technologies, IBM, CNUCE-Institute of the Italian National Research Council, and Tokyo Institute of Technology for sponsoring travel expenses of our keynote speakers Bruce Maggs, Greg Pfister, Domenico Laforenza, and Satoshi Matsuoka respectively. We would like to thank David Abramson for organizing the symposium panel session.

We would like to thank the School of Computing Science and Software Engineering of the QUT and those staff members involved in the organization of the symposium and Jacqui Donaldson and Carlie Green of QUT's Office of Commercial Services for their assistance. Particular acknowledgement is due to the local arrangements committee, chaired by Wayne Kelly, which managed symposium finances and registrations and whose members also included: Cathy Kay, Naomi Alexander, Chris Ho-Stuart and Sam Makki. Cho-Li Wang has advertised the symposium call for participation extensively that significantly helped in attracting participants from all over the world. We would like to thank all of these people for their efforts and contributions towards the successful organization of the symposium.

We hope that your participation in this event will help you create a new network of colleagues, engender friendship, collaboration, and provide a great opportunity to share and learn the latest developments in cluster and grid computing in both industry and academia.

By the way, our next event in the series (www.ccgrid.org), CCGrid 2002, is being held in Berlin, Germany in May 2002. We hope very much to see you all again in Berlin next year.

Enjoy your visit to Brisbane and Queensland, the sunshine state of Australia!



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PC Chair's Message

On behalf of the program committee it gives me great pleasure to present the program and these proceedings for the 1st ACM/IEEE Symposium on Cluster Computing and the Grid (CCGrid 2001), held during 15-18th May 2001 in Brisbane, Australia. The symposium series has got off to an excellent start with a very strong program for the inaugural offering. We have papers on many important current and emerging topics ranging from message passing libraries through to grid testbeds. I wish to thank all authors of submitted papers for their hard work and ideas; it has been a difficult job selecting papers for inclusion in the proceedings.

I would like to thank the keynote speakers, invited presenters, industry speakers, and tutorial presenters for agreeing to present special sessions at the symposium. These sessions have greatly enhanced the program.

The symposium has a main stream and several workshops. Originally 11 workshops were planned; four of these were unviable, hence papers were absorbed into the main stream. The workshops were organised separately by the respective workshop chairs. My thanks go to these organisers for arranging such a strong and interesting set of workshops. The main symposium stream has eight sessions; there is some overlap with the workshops. A total of 126 papers were received for the main symposium and of these 48 papers were accepted for publication resulting in an acceptance rate of less than 40 percent. Each paper was peer reviewed by at least two reviewers, most by three or more; full papers were reviewed. The workshop papers were also peer reviewed and each paper had at least two reviews. A total of 37 papers were accepted for the workshops from 61 submissions — an acceptance rate of 61 percent.

I would like to thank the symposium PC for helping to organise the program. My thanks go also to the reviewers, particularly those who were given short notice to do some extra reviews.

This is a truly international symposium with contributions from the following countries: Austria, Belgium, Brazil, Canada, China, France, Germany, Greece, India, Italy, Japan, Korea, Netherlands, New Zealand, Poland, Portugal, Singapore, Spain, Switzerland, Taiwan, UK, USA, as well as throughout Australia.

My special thanks go to the general chairs Rajkumar Buyya and George Mohay for their advice and help with numerous issues, to Bob Werner and his team at the IEEE press for managing and publishing the proceedings despite difficult timeframes, and finally to the producers of the *wimpe* package (<http://www.cs.dartmouth.edu/~nicol/wimpe/>); *wimpe* made my job so much easier!

I am sure you will find CCGrid 2001 an interesting and exciting symposium.



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