<u>Call for Papers</u>
IEEE Transactions on Parallel and Distributed Systems
Special Issue on Power-Aware Parallel and Distributed Systems (PAPADS)

Energy is one of the most valuable and scarce resources available to humanity, a major portion of which is now being consumed to power up computers and their accessories. In particular, high-performance parallel and distributed systems, including data centers, supercomputers, clusters, real-time systems, embedded systems, and networks consume not only considerably high power but also require extensive air-conditioning. The explosive growth in the computing results in increased consumption of precious natural resources such as oil and coal. In the worst case, this could contribute to an *Energy Crisis*, a term that refers to some great bottleneck (or price rise) in the supply of energy resources to an economy. Furthermore, conversion of these resources to electricity results in carbon emissions that negatively impact the environment. Power-aware technologies will ultimately contribute to lower cost, environmentally friendly parallel and distributed systems. Thus, we must consider power consumption as a first-class resource and invent means to manage it autonomously along with performance, reliability, and security. In power-aware parallel and distributed systems, considerable work is going on in power management at the component, software, and system level, as well as on emerging power management standards for servers and devices and operating systems. This special issue aims to consolidate such work.

Topics of interest include but are not limited to:
- Power-aware **Software** for PAPADS
- Code **profiling and transformation** for power management
- Power-aware **middleware** for PAPADS
- **Architectural Support** for PAPADS
- **Resource management** to optimize performance and power
- **Runtime systems** that assist in power saving
- **Models** for collective optimization of power and performance
- **Monitoring tools** for power and performance of parallel and distributed systems
- **Algorithms** for reduced power, energy and heat for high-performance computing
- Power-aware **applications** on PAPADS
- Static and dynamic **data allocation** techniques for distributed servers

<u>Submission procedure:</u>
Authors should follow the instructions in the information for authors given at:
http://www.computer.org/portal/site/ieeecs/.

<u>Important Dates:</u>
Deadline for manuscript submission: 1 October 2007
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Ishfaq Ahmad received a B.Sc. degree in Electrical Engineering from the University of Engineering and Technology, Lahore, Pakistan, in 1985, and an MS degree in Computer Engineering and a Ph.D. degree in Computer Science from Syracuse University, New York, U.S.A., in 1987 and 1992, respectively. His research focus is on power-aware high-performance parallel and distributed systems, grid computing, scheduling and mapping algorithms for scalable architectures, multimedia systems, and video compression techniques. His research work in these areas is published in close to 200 technical papers in refereed journals and conferences, with best paper awards at Supercomputing 90 (New York), Supercomputing `91 (Albuquerque), and 2001 International Conference on Parallel Processing (Spain). Dr. Ahmad is currently a full professor of computer science and engineering in the CSE Department of the University of Texas at Arlington. His current research is funded by the Department of Justice (DOJ), National Science Foundation (NSF), and Sun Microsystems. At UTA, he leads the Multimedia Laboratory and IRIS (Institute for Research in Security), an inter-disciplinary university wide research center. He is on the editorial board of the Journal of Parallel and Distributed Computing, IEEE Distributed Systems Online, IEEE Transactions on Circuits and Systems for Video Technology, and Cluster Computing.

Rami Melhem received a B.E. in Electrical Engineering from Cairo University in 1976, an M.A. degree in Mathematics and an M.S. degree in Computer Science from the University of Pittsburgh in 1981, and a Ph.D. degree in Computer Science from the University of Pittsburgh in 1983. He was an Assistant Professor at Purdue University prior to joining the faculty of The University of Pittsburgh in 1986, where he is currently a Professor of Computer Science and Electrical Engineering and the Chair of the Computer Science Department. His research interests include Power Management, Real-Time and Fault-Tolerant Systems, Optical Networks, High Performance Computing and Parallel Computer Architectures. Dr. Melhem served on program committees of numerous conferences and workshops. He was on the editorial board of the IEEE Transactions on Computers and the IEEE Transactions on Parallel and Distributed systems. He is serving on the advisory boards of the IEEE technical committees on Computer Architecture. He is the editor for the Springer Book Series in Computer Science and is on the editorial board of the Computer Architecture Letters, The International Journal of Embedded Systems and the Journal of Parallel and Distributed Computing. Dr. Melhem is a fellow of IEEE and a member of the ACM.

Kirk Cameron is an associate professor of Computer Science at Virginia Polytechnic Institute and State University. He received his Ph.D. from Louisiana State University in August 2000. Dr. Cameron was awarded an NSF CAREER Award in 2004 for his seminal work in high-performance, power-aware computing. His work showed conclusively that inefficiencies in parallel and distributed scientific applications could be exploited to save power without impacting performance. Since publication of his initial results at SC04, power-aware sessions have appeared in every major HPC conference including SC, IPDPS, ICS, PPoPP, and others. In addition to the NSF CAREER Award (2004), Dr. Cameron is a recipient of the DOE Early Career Principal Investigator Award (2004), U of SC College of Engineering and Information Technology Young Investigator Research Award (2005), and in 2007 was named a VT College of Engineering Faculty Fellow. His research interests include high-performance and grid computing, parallel and distributed systems and applications, computer architecture, power-aware systems, and performance evaluation and prediction.