The 7th International Workshop on System Management Techniques, Processes and Services (SMTPS)

*Special Focus on **Cloud Computing***

Anchorage, Alaska May 16, 2011
http://www.ece.rutgers.edu/~smtps
To be held in conjunction with IPDPS 2011

ADVANCE PROGRAM

9:00 – 9:15	**Welcoming Remarks**
9:15 – 10:30	**Keynote Address** (with Q & A) ***Challenges and Opportunities in Large Scale Cloud Management for HPC*** David B. Jackson (Adaptive Computer)
10:30 – 11:00	**break**
Session 1:	**Computing Platform Management**
11:00 – 11:30	***Parallax - A New Operating System for Scalable, Distributed, and Parallel Computing*** Rao Mikkilineni (Kawa Objects Inc.) Ian Seyler (Return Infinity)
11:30 – 12:00	***Reducing Shared Cache Contention by Scheduling Order Adjustment on Commodity Multi-Cores*** Yingxin Wang, Yan Cui, Pin Tao, Haining Fan, Yu Chen, Yuanchun Shi (Tshinghua Univ.)
Noon – 1:30	**lunch**
Session 2:	**Workload Management**
1:30 – 2:00	***Evaluating Load Generation in Virtualized Environments for Software Performance Testing*** Marco A. S. Netto, Suzane Menon, Hugo V. Vieira, Leandro T. Costa, Flavio M. de Oliveira (Pontifical Catholic Univ. of Rio Grande do Sul), Rodrigo Saad (Dell Inc.), Avelino Zorzo (Pontifical Catholic Univ. of Rio Grande do Sul)
2:00 – 2:30	***New Metrics for Scheduling Jobs on a Cluster of Virtual Machines*** Yanbin Liu, Norman Bobroff (IBM), Javier Delgado (Florida International Univ.), Liana Fong, Seetharami R Seelam (IBM)
2:30 – 3:00	***Secondary Job Scheduling in the Cloud with Deadlines*** Shiyao Chen (Cornell Univ.), Ting He, Ho Yin Starsky Wong, Kang-Won Lee (IBM), Lang Tong (Cornell Univ.)
3:00 – 3:30	**break**
Session 3:	**Communication & Security**
3:30 – 4:00	***Characterization of the Communication Patterns of Scientific Applications on Blue Gene/P*** Pier Giorgio Raponi (Suola Superiore Sant' Anna), Fabrizio Petrini, Fabio Checconi, Bob Walkup (IBM)
4:00 – 4:30	***Privacy Protection in Service Discovery for Large-scale Distributed Computing Systems*** Jun Yeol Choi, Zhong Yuan Li, Hee Yong Youn (Sungkyunkwan Univ.), Ohyoung Song (Chung-Ang Univ.)
4:30 – 5:15	**Industrial Talk** ***Cloud versus Cloud: the Blessings and Challenges of Cloud Computing for Science*** Kate Keahey (Argonne National Laboratory Computation Institute, Univ. of Chicago)
5:15 – 5:30	**Closing Remarks**

The 7th International Workshop on System Management Techniques, Processes and Services (SMTPS)

Keynote Address

Challenges and Opportunities in Large Scale Cloud Management for HPC

Speaker: David B. Jackson

Abstract – Cloud encompasses a rapidly maturing and growing collection of technologies which are having a massive impact on the computing world. While these technologies are rapidly being adopted in the enterprise, HPC has been slower to broadly leverage cloud's potential benefits. Whether it would be PAAS, IAAS, or SAAS, public or private clouds, dynamic provisioning, or server and storage virtualization, initiatives are now underway to change this and usher in a new standard in what HPC means and how it can best service its users.

As HPC undergoes these changes, organizations will be confronted with issues of how to best provide tried and true usage models to existing users within a new technology framework. Further, organizations will be pressed to offer completely new cloud usage models which were previously not possible. These changes will add new layers to the resource management stack, will redefine the roles of directors, administrators, and operators of these systems, and will allow these organizations to step back and re-evaluate what it means to be an HPC provider.

Biography – David B. Jackson, Founder, CEO, and CTO of Adaptive Computer
Biography: David Jackson is an established thought leader in adaptive enterprise data centers, cloud, and HPC environments. Over a period of sixteen years, David worked for several HPC centers, providing resource management and scheduling services to such leadership-class organizations as Lawrence Livermore National Laboratory, San Diego Supercomputer Center, National Center for Supercomputing Applications, Pacific Northwest National Laboratory, Maui High Performance Computing Center, and the Center for High Performance Computing. He also worked as a consultant at IBM's AIX System Center. David is a founding member of the Global Grid Forum and a member of the Department of Energy's Scalable System Software Initiative. David has authored numerous publications and has presented at various industry conferences, including Supercomputing, GlobusWorld, IEEE Sigmetrics, and Usenix/Extreme Linux. David attended Brigham Young University, , where he earned a bachelor's degree in electrical and computer engineering, a second bachelor's degree in computer science, and a master's degree in computer science.

Industrial Talk

Cloud versus Cloud: the Blessings and Challenges of Cloud Computing for Science

Speaker: Kate Keahey

Abstract – Infrastructure-as-a-Service (IaaS) cloud computing has revolutionized the way we think about acquiring and managing physical resources. Since it allows users to easily provision remote resources on-demand, it enabled whole communities to treat the acquisition of compute and storage resources as an operational consideration rather than capital acquisition. The emergence of this new model raises many questions, in particular for special requirements groups such as scientific computing. Can cloud computing be used by scientific applications? Does it, or will it ever, provide sufficient capabilities for high-performance applications? How will it change our work patterns? What challenges need to be overcome, and what is its overall potential for accelerating science?

I will give an overview of the challenges and potential of cloud computing projects in science. I will describe what attracted various scientific communities to cloud computing and give examples of how they integrated this new model into their work. I will also discuss challenges and issues – related to performance, logistics, utilization, and privacy that need to be overcome to make the benefits of cloud computing available to an ever larger set of scientific applications. Finally, I will discuss the emerging technology trends and discuss how they can benefit science.

Biography – Dr Kate Keahey is a scientist at the Argonne National Lab and a fellow of the Computation Institute at the University of Chicago. Her research focuses on virtualization, policy-driven resource management, and various aspects of obtaining quality of service in the Grid environment. She is the creator of Nimbus, an open source toolkit for turning a cluster into an infrastructure as a service (IaaS) cloud, primarily targeted at making IaaS available to researchers and scientists. Her past positions included being a technical staff member at Los Alamos National Laboratory.