4th IEEE/ACM International Conference on Utility and Cloud Computing (UCC 2011)

Program Guide

5-7 December, 2011
The Langham Hotel
Melbourne, Australia

Your notes:

Message from the UCC 2011 General Co-Chairs

We are pleased to welcome you to the 4th IEEE/ACM International Conference on Utility and Cloud Computing (UCC 2011), sponsored by the IEEE Computer Society and the Association for Computing Machinery (ACM), USA.

Computing is being transformed to a model consisting of services that are commoditized and delivered in a manner similar to traditional utilities such as water, electricity, gas, and telephony. In such a model, users access services based on their requirements without regard to where the services are hosted or how they are delivered. Several computing paradigms have promised to deliver this utility computing vision and Cloud computing is the most recent kid in the block, which is on its way to make the vision of "computing utilities" a reality.

To provide a dedicated forum for sharing recent R&D advances and industrial innovations in the area of Utility Computing, UCC—International Conference on Utility and Cloud Computing—series has been initiated. This conference series has emerged out of several successful Cloud computing events (Cloud 2009 held in Shanghai, China; Cloud 2010 held in Melbourne, Australia; and UCC 2010 held in Chennai, India). UCC 2011, as the 4th event in the series, focuses on principles, paradigms, and applications of Utility Computing and its practical realization in industry, especially in the form of Cloud Computing.

UCC is an important conference for the international community as it provides a forum for Utility and Cloud Computing researchers, service providers, developers, users, and those who want to become aware of the progresses made in these areas.

The UCC 2011 conference is hosted as an independent event for the first time. The city of Melbourne, as the 2011 world's most-livable city in the world, is the perfect location for convening internationally renowned leaders from academia, government, and industry to present their work. We are pleased with the response we received from researchers, developers, and users of Cloud Computing technologies and applications from all over the world. The technical program is simply outstanding.

UCC 2011 is extremely fortunate to feature keynotes and invited talks from leading researchers from Australia, Europe, and United States. The three invited speakers are: Professor Manish Parashar (Rutgers: The State University of New Jersey, USA); Professor Albert Zomaya (The University of Sydney, Australia); and Dr. Wolfgang Gentzsch (Distributed European Initiative for Supercomputing Applications, Germany). The two industry speakers are: Geng Lin (Dell Inc., USA) and Dr. Dimitrios Georgakopoulos (CSIRO, Canberra, Australia).

The continued success of UCC requires dedicated and high standard efforts from numerous international volunteers. We would like to express our sincere gratitude to the members of the Steering Committee and the Program Committee chaired by Professor Shrideep Pallickara (Colorado State University) and Professor Geoffrey Charles Fox (Indiana University). They have managed peer-reviews of all submitted full papers and selected top quality research papers for presentation at the conference.

The UCC 2011 conference received 127 submissions from 32 countries around the world: Australia, Austria, Brazil, Canada, China, Egypt, Estonia, France, Germany, India, Israel, Italy, Japan, Korea, Malaysia, Mexico, Morocco, Netherlands, New Zealand, Pakistan, Romania, Russia, Saudi Arabia, Singapore, Spain, Sudan, Sweden, Taiwan, United Arab Emirates, United Kingdom, United States, and Vietnam. After peer-reviewing all the submissions, the Program Committee accepted 34 top quality works as full papers, resulting in an acceptance rate of ~26%. The conference also accepted 8 submissions as short papers.

We thank Dr. Mukaddim Pathan and Professor Omer Rana for coordinating the organisation of 5 satellite workshops on hot topics such as Privacy and Provenance in the Cloud and Scientific Applications on Clouds. We appreciate the efforts of the chairs of various workshops and their PC members for attracting and selecting top quality papers for presentation at the conference.

We thank Dr. Pavan Balaji and Dr. Rajiv Ranjan for organizing and managing the poster session, Dr. Suraj Pandey and Dr. Rodrigo Calheiros for the excellent management of the conference website and local organization, and publicity coordinators, Dr. Masoud Sadjadi, Dr. Carlos Becker, A.B.M. Russel, and Dr.

Jose Luis Vazquez-Poletti, for helping us to reach a broader community. We thank Bob Werner for his support in the publication of the conference proceedings in record time.

As we all know, the local arrangements are a key aspect of any event. We would like to offer our special appreciation to leading volunteers of local organizing committee members, Suraj Pandey and Karthik Sukumar, and all other CLOUDS Lab members for their dedicated support in hosting UCC 2011. We thank Kim Stevenson for managing registrations and Dushy Wanigatunga for his friendly services as Conventions Manager of The Langham Hotel.

Thanks are also due to our sponsors, namely, IEEE, ACM, and TCSC (Technical Committee on Scalable Computing), and organization supporters Melbourne University's CLOUDS Lab, Manjrasoft, CSIRO, and Dell. We also like to thank HPCWire, our media sponsor, and Manjrasoft for sponsoring awards.

Ultimately, the success of the conference will be judged by how well the delegates have participated, learnt, interacted, and established contacts with other researchers in their relevant fields. The Committees and the sponsors have provided the funding, the venue, and the environment to allow these objectives to be achieved. It is now up to all of us to ensure that the conference is an outstanding success.

Finally, we wish everyone a successful, stimulating and rewarding meeting and look forward to seeing you again in future editions of UCC.

Enjoy your visit to the multicultural Melbourne and to the beautiful Australia!

Professor Rajkumar Buyya
Cloud Computing and Distributed Systems (CLOUDS) Laboratory
Department of Computer Science and Software Engineering
The University of Melbourne, Australia

Professor Kai Hwang
Department of Electrical Engineering and Computer Science
The University of Southern California, Los Angeles, USA

Your notes:

• Statistical Modeling of Spot Instance Prices in Public Cloud Environments *Bahman Javadi, Ruppa Thulasiram and Rajkumar Buyya* • Cost-Efficient Utilization of Public SLA Templates in Autonomic Cloud Markets *Ivan Breskovic, Michael Maurer, Vincent Chimaobi Emeakaroha, Ivona Brandic and Schahram Dustdar* • Personalized Open API Recommendation in Clouds via Item-based Collaborative Filtering *Huifeng Sun, Zibin Zheng, Junliang Chen, Weimin Pan, Chuanchang Liu and Wenming Ma*	
Venue: Ballroom B	Regular Papers Session 9: Scheduling and load balancing II Session Chair: Prof. Gul Agha, University of Illinois at Urbana-Champaign, USA
• On Data Staging Strategies for Mobile Accesses to Cloud Services *Yang Wang, Bharadwaj Veeravalli and Chen-Khong Tham* • Defragmentation of Resources in Virtual Desktop Clouds for Cost-Aware Utility-Optimal Allocation *Mukundan Sridharan, Prasad Calyam, Aishwarya Venkataraman and Alex Berryman* • Intelligent Automated Diagnosis of Client Device Bottlenecks in Private Clouds *Chathuranga Widanapathirana, Jonathan Li, Y. Ahmet Sekercioðlu, Milosh Ivanovich, and Paul Fitzpatrick* • Multi-objective Meta-heuristics for Scheduling Applications with High Availability Requirements and Cost Constraints in Multi-Cloud Environments *Marc Frincu and Ciprian Craciun*	
Venue: Ballroom C	Cloud Computing & Future of Work Workshop (Session 2)
• Future of Work Computing via Business and Technology Consulting (Keynote Talk) *Dr. Jean-Claude Franchitti (Cognizant Convergent Cloud Group)* • Virtual Simulation and Augmented Interfaces for Business Models with focus on Banking and Retail *Biju Shoolapani and Parthasarathi Jinka*	
3:30 PM – 4:00 PM	Afternoon Tea
4:00 PM – 5:30 PM	Panel – Ubiquitous Cloud Computing: Open Challenges, Innovation Opportunities, and Standards Gul Agha (Chair), University of Illinois at Urbana-Champaign, USA Dawn Leaf, US National Institute of Standards and Technology Albert Zomaya, Sydney University, Australia Bala Varadarajan, Fujitsu Australia Geng Lin, Dell
5:30 PM – 6:00 PM	Conference Closing
7:00 PM – 10:00 PM	Social Program/Conference Dinner

Day 1: December 5, 2011			
ROOM	Ballroom A	Ballroom B	Ballroom C
8:00 AM – 9:00 AM	Registration		
9:00 AM – 10:30 AM	Opening & Keynote 1		
10:30 AM – 11:00 AM	Morning Tea		
11:00 AM – 1:00 PM	Regular Papers 1	Tutorial 1	CCSA
1:00 PM – 2:00 PM	LUNCH		
2:00 PM – 4:00 PM	Regular Papers 2	Tutorial 2	CCSA
4:00 PM – 4.30 PM	Afternoon Tea		
4:30 PM – 6:00 PM	Short Papers 1	Short Papers 2	CCSA
Day 2: December 6, 2011			
ROOM	Ballroom A	Ballroom B	Ballroom C
9:00 AM – 10:00 AM	Keynote 2		
10:00 AM – 10:30 AM	Morning Tea		
10:30 AM – 12:30 PM	Regular Papers 3	Regular Papers 4	ITACC
12:30 PM – 1:30 PM	LUNCH		
1:30 PM – 3:30 PM	Industry Track		
3:30 PM – 4:30 PM	Poster & Demos with Afternoon Tea		
4:30 PM – 6:00 PM	Regular Papers 5	Regular Papers 6	ITACC
Day 3: December 7, 2011			
ROOM	Ballroom A	Ballroom B	Ballroom C
9:00 AM – 10:00 AM	Keynote 3		
10:00 AM – 10:30 AM	Morning Tea		
10:30 AM – 12:30 PM	Regular Papers 7	CSSQM	CC & Future of Work
12:30 PM – 1:30 PM	LUNCH		
1:30 PM – 3:30 PM	Regular Papers 8	Regular Papers 9	CC & Future of Work
3:30 PM – 4:00 PM	Afternoon Tea		
4:00 PM – 5:30 PM	Panel		
5:30 PM – 6:00 PM	Closing Session		
7:00 PM – 10:00 PM	Social Program/Conference Dinner		

Keynote 1:

Energy Efficient Cloud Computing Systems

Albert Y. Zomaya
Centre for Distributed and High Performance Computing
School of Information Technologies
The University of Sydney, Australia

Abstract:

Global warming and climate change trends call for urgent action to manage information and communication technologies in a sustainable manner by minimizing energy consumption and utilizing resources more efficiently. Distributed computing environments (clusters, grids, clouds, etc) have become the de facto platforms for many applications. These systems bring a range of heterogeneous resources that should be able to function continuously and autonomously. However, distributed systems expend a lot of energy which raises a range of important research issues related to the use and virtualisation of ICT resources in a way offers significant potential to contribute to the goal of what has been described as 'green computing'. This talk will review some of the important questions related to the development of new algorithms and tools for energy–aware resource management allocation for large–scale distributed systems, such as clouds, enabling these systems to become environmentally friendly.

Biography:

Albert Y. ZOMAYA is currently the Chair Professor of High Performance Computing & Networking and Australian Research Council Professorial Fellow in the School of Information Technologies, The University of Sydney. He is also the Director of the Centre for Distributed and High Performance Computing which was established in late 2009. Professor Zomaya is the author/co-author of seven books, more than 380 papers, and the editor of nine books and 11 conference proceedings. He is the Editor in Chief of the IEEE Transactions on Computers and serves as an associate editor for 19 leading journals. Professor Zomaya is the recipient of the Meritorious Service Award (in 2000) and the Golden Core Recognition (in 2006), both from the IEEE Computer Society. Furthermore he is the recipient of the IEEE TCPP Outstanding Service Award and the IEEE TCSC Medal for Excellence in Scalable Computing, both in 2011. He is a Chartered Engineer (CEng), a Fellow of the AAAS, the IEEE, the IET (U.K.), and a Distinguished Engineer of the ACM.

Day 3: December 7, 2011			
9:00 AM – 10:00 AM	Keynote 3 – HPC in the Cloud: use cases from research and industry Dr. Wolfgang Gentzsch, DEISA (Distributed European Initiative for Supercomputing Applications), Germany		
10:00 AM – 10:30 AM	Morning Tea		
10:30 AM – 12:30 PM	Regular Papers 7	CSSQM	Cloud computing and future of work
Venue: Ballroom A	Regular Papers Session 7: Management of Cloud resources: Spot Instances, SLAs and Marketplaces I Session Chair: Dr. Wolfgang Gentzsch, DEISA, Germany		
• Dynamic Resource Allocation for Spot Markets in Cloud Computing Environments *Qi Zhang, Quanyan Zhu and Raouf Boutaba* • An Autonomic Open Marketplace for Inter-Cloud Service Management *Haydn Mearns, John Leaney, Artem Parakhine, John Debenham and Dominique Verchere* • A Marketplace to Rule Them All - Combining WS-Agreement, Service Negotiation Protocols and Heterogeneous Services *Ralph Vigne, Juergen Mangler and Erich Schikuta* • Pricing Mechanisms for Cloud Services: Status Quo and Future Models *Florian Muhss, Robert Neumann and Andreas Schmietendorf*			
Venue: Ballroom B	Cloud Service Security and Quality Management Workshop		
• Verification of Data Location in Cloud Networking *Thorsten Ries, Volker Fusenig, Christian Vilbois and Thomas Engel* • Verifying Digital Provenance in Web Services *Ben Palmer, Kris Bubendorfer and Ian Welch* • Performance Management for the Dynamic Storage Tiering by Virtual Volume Clustering *Hironori Emaru and Yoshiaki Takai* • SLA-based Content Delivery in multi-CDNs *Nadia Ranaldo and Eugenio Zimeo*			
Venue: Ballroom C	Cloud Computing & Future of Work Workshop (Session 1)		
• Future of Pharmacy, Health & Wellness (Keynote Talk) *Manish Mathur (Senior Director of Architecture, Walgreens Pharmacy Health and Wellness)* • Effective Migration of Enterprise Applications in Multicore Cloud *Suresh Venugopal, Karthikeyan Ganesan and Sravan Desikan*			
12:30 PM – 1:30 PM	LUNCH		
1:30 AM – 3:30 PM	Regular Papers 8	Regular Papers 9	Cloud computing and future of work
Venue: Ballroom A	Regular Papers Session 8: Management of Cloud resources: Spot Instances, SLAs and Marketplaces II Session Chair: Prof. Manish Parashar, Rutgers, USA		
• SMICloud: A Framework for Comparing and Ranking Cloud Services *Saurabh Kumar Garg, Steve Versteeg, and Rajkumar Buyya*			

• Automated Configuration of Legacy Applications in the Cloud *Xavier Etchevers, Thierry Coupaye, Fabienne Boyer, Noël De Palma and Gwen Salaün*	
Venue: Ballroom C	Intelligent Techniques and Architectures for Autonomic Clouds Workshop (Session 2)
• Distributed Green Compiler *Faiza Fakhar, Raihan Ur Rasool and Owais Malik* • Dot-base62x: A Compact Textual Representation of IPv6 Address for Clouds *Zhenxing Liu, Lu Liu, James Hardy, Ashiq Anjum, Richard Hill, and Nick Antonopoulos* • Reliability Measurement of Web 2.0 based Cloud Applications *Zia Ul Qamar, Raihan Ur Rasool, Hammad Majeed, Imdad Ullah, Saeed Afzal, Bilal Ali, Hafiz Farooq Ahmad, and Sidrah Inayat*	

Keynote 2:

Can Clouds Transform Science? Exploring the Role of Clouds in Computational and Data-enabled Science and Engineering

Manish Parashar
Department of Electrical and Computer Engineering
Rutgers: The State University of New Jersey, USA

Abstract:

Cloud computing has emerged as a dominant paradigm that has been widely adopted by enterprises. Clouds provide on-demand access to computing utilities, an abstraction of unlimited computing resources, and support for on-demand scale up, scale down and scale out. Clouds are also rapidly joining high-performance computing system, clusters and Grids as viable platforms for scientific exploration and discovery. As a result, understanding application formulations and usage modes that are meaningful in such a hybrid infrastructure, and how application workflows can effectively utilize it, is critical. In this talk, I will I explore the role of clouds in science and engineering. I will also explore how science and engineering applications can benefit from clouds and how the cloud abstraction can lead to new paradigms and practices. This talk is based on research that is part of the CometCloud autonomic cloud-computing project at the Center for Autonomic Computing at Rutgers.

Biography:

Manish Parashar is Professor of Electrical and Computer Engineering at Rutgers University. He is also a founding Director of the Center for Autonomic Computing and The Applied Software Systems Laboratory (TASSL), and Associate Director of the Rutgers Center for Information Assurance (RUCIA). Manish received a BE degree from Bombay University, India and MS and Ph.D. degrees from Syracuse University. His research interests are in the broad area of parallel and distributed computing and include Computational and Data-Enabled Science and Engineering, Autonomic Computing, and Power/Energy Management. A key focus of his research is on addressing the complexity or large-scale systems and applications through programming abstractions and systems. Manish has published over 350 technical papers, serves on the editorial boards and organizing committees of a large number of journals and international conferences and workshops, and has deployed several software systems that are widely used. He has also received numerous awards and is Fellow of IEEE/IEEE Computer Society and Senior Member of ACM. For more information please visit http://nsfcac.rutgers.edu/people/parashar.

Keynote 3:

HPC in the Cloud: use cases from research and industry

Wolfgang Gentzsch

DEISA (Distributed European Initiative for Supercomputing Applications), Germany

Abstract:

There is a lot of good activity and visibility of HPC in the Cloud, in our community, and cloud service providers publish interesting (theoretical) case studies on cloud infrastructures and technologies and how to use them. Also, in mainstream IT services, there are many good use cases for describing how to use clouds for daily business. However, in the emerging field of 'mainstream HPC' (or should we rather say Technical Computing), there are still so far only very few success stories published about applying cloud infrastructure and technology in daily research and industry. Therefore, in our talk, we will contribute an overview on selected and highly actual real use cases from HPC in the Cloud and present a short analysis of each of them. Finally, we will conclude with a trend analysis, and a list of lessons learned and recommendations.

Biography:

Dr. Wolfgang Gentzsch is a senior consultant for HPC, Grid and Cloud Computing and the General Chairman of the ISC Cloud Conference Series. Previously, he was an Advisor to the EU funded project DEISA, the Distributed European Initiative for Supercomputing Applications, and he directed the 3-year German Government funded $150 Mio D-Grid Initiative for developing a sustainable Grid infrastructure for research and industry in Germany. He was a member of the Board of Directors of the OGF Open Grid & Cloud Forum standards organization, and a member of the US President's Council of Advisors for Science and Technology, PCAST. He founded the e-School Project which aims at building and operating a professional interactive Web 2.0 computer simulation laboratory for K-20 science and engineering education and edutainment.

Before, Wolfgang was a professor of computer science and mathematics at several universities in the US and in Germany, and held leading positions at the MCNC Grid and Data Center, Sun Microsystems, Gridware, Genias, and the DLR German Aerospace Research Center. Wolfgang studied mathematics and physics at the Technical University in Aachen, and got his PhD in numerical methods for partial differential equations.

	• Open Internet of Things (OpenIoT) *Dr. Dimitrios Georgakopoulos, Director, Information Engineering Laboratory CSIRO ICT Centre, Australia* • Capabilities at Your Fingertips: An Overview of Innovation at AWS – Amazon Web Services *Simon Elisha, Principal Solution Architect, Amazon Web Services* • Fujitsu's Efforts in Cloud Computing *Bala Varadarajan, Managing Director, Fujitsu Australia Software Technology*
3:30 PM – 4:30 PM	Poster & Demos with Afternoon Tea
• Private Table Database Virtualization for DBaaS *Tim Kiefer and Wolfgang Lehner* • Towards Open-Source Cloudware *Dana Petcu, Marc Frincu, Ciprian Dorin Crăciun, Silviu Panica, Marian Neagul and Georgiana Macariu* • Ezilla Toolkit - One Click to Build Private Cloud Easily *Yi-Lun Pan, Chang-Hsing Wu, Hsi-En Yu, Hui-Shan Chen, and Weicheng Huang* • A Secure Storage Service in the Hybrid Cloud *Surya Nepal, Carsten Friedrich, Leakha Henry and Shiping Chen* • MeDiCi-Cloud: A Workflow Infrastructure for Large-scale Scientific Applications *Jian Yin, Guang Lin, Ian Gorton, and Binh Han* • A Decision Framework for Discovery and Integration of Cloud Services (Web Poster) *Amirreza Tahamtan, Amin Anjomshoaa, S. Amir Beheshti, A Min Tjoa* • DCC: Data Centric Compute Resource at the NCI-NF (Web Poster) *Jie Cai, Muhammad Atif, Michael Chapman, Joseph Antony, David Singleton, Ben Evans, and Peter Strazdins*	
4:30 PM – 6:00 PM	Regular Papers 5 | Regular Papers 6 | ITACC
Venue: Ballroom A	Regular Papers Session 5: Virtual Machines II Session Chair: Prof. Chen-Khong Tham, National University of Singapore
• Impact of Cloud Computing Virtualization Strategies on Workloads' Performance *Qingling Wang and Carlos Varela* • Towards Profitable Virtual Machine Placement in the Data Center *Weiming Shi and Bo Hong* • Using Lightweight Virtual Machines to Run High Performance Computing Applications: The Case of the Weather Research and Forecasting Model *Hector Duran-Limon, Nikos Nikos Parlavantzas, Ming Zhao, Luis Silva-Bañuelos and Victor Tellez-Valdez*	
Venue: Ballroom B	Regular Papers Session 6: Scheduling and load balancing I Session Chair: Prof. Shrideep Pallickara, Colorado State University, USA
• Server Consolidation Algorithms with Bounded Migration Cost and Performance Guarantees in Cloud Computing *Yufan Ho, Pangfeng Liu and Jan-Jan Wu* • Characterizing e-science file access behavior via latent Dirichlet allocation Yusik Kim and Cécile Germain-Renaud	

Day 2: December 6, 2011			
9:00 AM – 10:00 AM	Keynote 2 – Can Clouds Transform Science? Exploring the Role of Clouds in Computational and Data-enabled Science and Engineering Professor Manish Parashar, Rutgers: The State University of New Jersey, USA		
10:00 AM – 10:30 AM	Morning Tea		
10:30 AM – 12:30 PM	Regular Papers 3	Regular Papers 4	ITACC
Venue: Ballroom A	Regular Papers Session 3: Virtual Machines I Session Chair: Prof. Carlos Varela, RPI, USA		
• Defeating Network Jitter for Virtual Machines *Luwei Cheng, Cho-Li Wang, and Sheng Di* • Utilizing Memory Content Similarity for Improving the Performance of Replicated Virtual Machines *Balazs Gerofi, Zoltan Vass and Yutaka Ishikawa* • Energy-efficient Virtual Machine Provision Algorithms for Cloud Systems *Ching-Chi Lin, Pangfeng Liu and Jan-Jan Wu* • Efficiency Assessment of Parallel Workloads on Virtualized Resources *Javier Delgado, Liana Fong, Yanbin Liu, Norman Bobroff, Seetharami Seelam and S. Masoud Sadjadi*			
Venue: Ballroom B	Regular Papers Session 4: Clouds and Scientific applications Session Chair: Bala Varadarajan, Fujitsu Australia Software Technology		
• Portable Parallel Programming on Cloud and HPC: Scientific Applications of Twister4Azure *Thilina Gunarathne, Bingjing Zhang, Tak-Lon Wu, and Judy Qiu* • NetworkCloudSim: Modelling Parallel Applications in Cloud Simulations *Saurabh Kumar Garg and Rajkumar Buyya* • Coasters: uniform resource provisioning and access for scientific computing on clouds and grids *Mihael Hategan, Justin Wozniak and Ketan Maheshwari* • The Cloud@Home Resource Management System *Salvatore Distefano, Antonio Puliafito and Maria Fazio*			
Venue: Ballroom C	Intelligent Techniques and Architectures for Autonomic Clouds Workshop (Session 1)		
• Load Prediction and Hot Spot Detection Models for Autonomic Cloud Computing *Prasad Saripalli, Gvr Kiran Kiran, Ravi Shankar, Harish Narware and Nitin Bindal* • Towards Context Caches in the Clouds *Saad Liaquat Kiani, Ashiq Anjum, Kamran Munir, Richard McClatchey, and Nick Antonopoulos* • A Dynamic VPN Architecture for Private Cloud Computing *Wen-Hwa Liao and Shuo-Chun Su* • An Architecture for Integrated Intelligence in Urban Management using Cloud Computing *Zaheer Khan, David Ludlow, Richard McClatchey, and Ashiq Anjum*			
12:30 PM – 1:30 PM	LUNCH		
1:30 PM – 3:30 PM	Industry Track • Emerging Network Architectures for Cloud Computing *Geng Lin, Chief Technology Officer, Networking Business, Dell Inc.*		

Industry Track - Talk 1:

Emerging Network Architectures for Cloud Computing

Geng Lin
Chief Technology Officer (Networking Business)
Dell Inc., USA

Abstract:

Cloud computing brings profound impact to virtually all segments in the IT industry, ranging from computing, storage, networking, to software applications. Yet the field of cloud computing is still in early stage - industry leaders and academia researchers are expanding this field rapidly. This talk focuses on the emerging network architectures for cloud computing. Key technologies such as virtualization and MapReduce middleware, Internet-scale “big data” mining and processing, warehouse-scale data center computing, etc. bring fundamental challenges to today’s network architecture. What limitation or impact does today’s network architecture have on cloud computing? How will the data center network architecture, the wide-area Internet architecture, and the broadband access network architecture evolve to better support cloud computing and cloud-based service delivery? What is the network’s role in security, reliability, performance, and scalability of cloud computing? Should the network be a dumb transport pipe or an intelligent stack that is cloud workload aware? What architectural role do Layer 4 network services, such as load balancing, security, and WAN optimization, play in the public and hybrid cloud delivery models?

This session provides an overview of the emerging network architectures for cloud computing and gives the audience a first-hand insight of the architectural approaches to the next generation cloud networking from industry leaders including Cisco, IBM, Dell, and HP, just to name a few. We will also highlight the technology trends and future directions for the cloud networking industry. The targeted audiences of this keynote are academic researchers, and technology and business in the cloud computing and networking industry.

Biography:

Dr. Geng Lin is the Chief Technology Officer of Networking Business at Dell Inc. In this role, he has the overall responsibility for technology strategy, system architecture, product innovation, and partnership and acquisition of key technologies, for Dell's networking business worldwide. Dell provides integrated IT solutions and is a worldwide leader in delivering cloud computing solutions. Dell has annual revenue over $60 billion in fiscal year 2011.
Before joining Dell, Dr. was the Chief Technology Officer of IBM Alliance at Cisco Systems where he was responsible for the technology strategy, innovation, and solution development of the joint Cisco-IBM solution portfolio worldwide. The Cisco-IBM Alliance delivers multi-billion dollar business revenues from a broad solution portfolio that covers data center virtualization and cloud computing, and video and rich media applications. Prior to Cisco, Dr. Lin served as Vice President of Software Applications at Netopia Inc., a Motorola company. He received B.Sc. and M.Sc. degrees from Peking University and Ph.D. degree from University of British Columbia, all in Computer Science (1985, 88, and 93).

Industry Track - Talk 2:

Open Internet of Things (OpenIoT)

Dimitrios Georgakopoulos
Director, Information Engineering Laboratory
CSIRO ICT Centre, Canberra, Australia

Abstract:

The OpenIoT project provides a research umbrella for many of the research trusts in CSIRO ICT Centre in the areas of sensor information management, cloud computing, semantic web, and NBN services. The project aims to produce an architecture and corresponding Open Source software platform that will help springboard IoT application/service development in academic research institutions and SMEs around Europe and the world. The “Things” in IoT are Internet-connected objects or appliances that will be an integral component of the future internet. Such objects must therefore become integrated into emerging internet service delivery models, such cloud computing. Indeed, the proliferation of applications involving internet-connected objects, has recently given rise to the notion of clouds of internet-connected objects. However, there is still no easy way to formulate and manage cloud environments of internet-connected objects, i.e., environments comprising “entities” (such as sensors, RFIDs, cameras, actuators and smart devices) and offering utility-based (i.e. pay as- you-go) services. OpenIoT is a joint effort of prominent open source contributors (of the GSN and AspireRFID projects) towards enabling a new range of open large scale intelligent IoT (internet-of- things) applications according to a utility computing delivery model. To this end, the project will research and provide an open source middleware framework enabling the dynamic formulation of self-managed cloud environments for IoT applications. The OpenIoT middleware framework will therefore serve as a blueprint for non-trivial IoT applications, which will be delivered in an autonomic fashion and according to a utility model. OpenIoT environments for internet-connected objects will greatly facilitate the deployment and delivery of applications, since they will enable businesses and citizens to select appropriate data and service providers rather than having to deploy physical sensors. At the same time, they will provide capabilities (such as on-demand large scale sensing), beyond what is nowadays possible. The open source nature of the project will facilitate enterprises to integrate novel added-value IoT solutions, based on the lowest possible Total Cost of Ownership, while at the same enabling students and researchers to experiment innovate and advance their IoT knowledge.

Biography:

At the CSIRO ICT Centre, Dr Dimitrios Georgakopoulos is the Director of the Information Engineering Laboratory. He is also holding the position of an adjunct professor at the Australian National University. Under the leadership of Dimitrios, the IE Lab conducts over twenty projects and is organized in nine research teams. He is overseeing the research performed by IE Lab teams in the areas of service oriented computing, semantic web and semantic data management, sensor information management, language and social computing, information retrieval, security and privacy, human factors, data mining and multi-agent systems, and computer vision. In 2008-09, Dimitrios also served as the Theme Leader of CSIRO's Service Science, Technologies, and Architectures (SSTA) Theme.

Massimo Villari, Francesco Tusa, Antonio Puliafito and Maurizio Paone

- Listening for thunder beyond the clouds: using the grid to analyse gravitational wave data
  Ra Inta(Invited talk)

Mohammed H. Sqalli, Fahd Al-Haidari and Khaled Salah • TVDSEC: Trusted Virtual Domains Security *Udaya Tupakula and Vijay Varadharajan*			
Venue: Ballroom B	Tutorial 2: Scaling Web Applications using Google App Engine Brian Quinlan, Software Engineer, Google		
Venue: Ballroom C	Cloud Computing and Scientific Applications Workshop (Session 2)		
• Issues and Challenges in Cloud Storage Services (Keynote talk) *Dr. Surya Nepal (Principal Research Scientist, CSIRO ICT Centre, Australia)* • Participatory Cyber Physical System in Public Transport Application *John Kah Soon Lau, Chen-Khong Tham and Tie Luo* • Extending HTTP Models to Web 2.0 Applications: the case of Social Networks *Luca Caviglione* • Simplifying MapReduce Data Processing *Jin-Ming Shih, Chih-Shan Liao and Ruay-Shiung Chang* • Secure Desktop Cloud for Gravitational Wave Detection *Linqing Wen (Invited talk)*			
4:00 PM – 4.30 PM	Afternoon Tea		
4:30 PM – 6:00 PM	Short Papers 1	Short Papers 2	CCSA
Venue: Ballroom A	Short Papers Session 1 Session Chair: Brian Quinlan, Google, Australia		
• Measurement for Improving the Design of Commodity Archival Storage Tiers *Dongjin Lee, Michael O'Sullivan and Cameron Walker* • Dynamic Mobile Cloud Computing: Ad Hoc and Opportunistic Job Sharing *Niroshinie Fernando, Seng Loke and Wenny Rahayu* • Practical Considerations in Cloud Utilization for the Science Gateway nanoHUB.org *Lynn Zentner, Steven Clark, Preston Smith, Swaroop Shivarajapura, Victoria Farnsworth, Krishna Madhavan and Gerhard Klimeck* • Monte Carlo linear system solver using MapReduce *Pelle Jakovits, Ilja Kromonov, and Satish Narayana Srirama*			
Venue: Ballroom B	Short Papers Session 2 Session Chair: Prof. Cecile Germain-Renauld, University Paris-Sud, France		
• Test Reconfiguration for Service Oriented Applications *Mark B Cooray, James H Hamlyn-Haris and Robert G Merkel* • An Extensible Cloud Platform Inspired by Operating Systems *Akiyoshi Sugiki and Kazuhiko Kato* • Economic Perspectives of Cloud Computing *Zhongliu Xie* • Integrity Based Intrusion Detection System for Enterprise and Cloud Environments *Ferrol Aderholdt, Sheikh Ghafoor, Ambareen Siraj and Stephen Scott*			
Venue: Ballroom C	Cloud Computing and Scientific Applications Workshop (Session 3)		
• FairCPU: Architecture for Allocation of Virtual Machines Using Processing Features *Emanuel Coutinho, Paulo Rego, Danielo Gomes and Jose De Souza* • Applications of Heterogeneous Computing in Computational and Simulation Science *Luke Domanski, Tomasz Bednarz, Tim Gureyev, Lawrance Murray, Emma Huang and John Taylor* • CLEVER: a Cloud Cross-Computing Platform leveraging GRID resources			

Industry Track - Talk 3:

Capabilities at Your Fingertips: An Overview of Innovation at AWS – Amazon Web Services

Simon Elisha
Principal Solution Architect, Amazon Web Services

Abstract:

The world of cloud services moves quickly, with rapid innovation and service improvement being the “new normal”. AWS focuses on customer needs and delivering meaningful services in a rapid fashion.

This session will take attendees for a high-level journey of the last 18 months of innovation right up to the current day. Providing an accessible and easy way to understand the palate of services available to developers and business alike.

Biography:

As a Principal Solution Architect at Amazon Web Services, Simon Elisha helps businesses leverage technologies like Cloud Computing that are changing the way businesses compete in the new world of IT. With extensive experience in large-scale systems architecture and development as well as having held senior roles at major technology vendors and business consulting organizations, Simon brings a pragmatic and refreshing approach to the nexus of technology and business.

Simon has over 21 years of industry experience and has held senior roles at organisations including Cisco, Hitachi Data Systems, VERITAS Software, PriceWaterhouseCoopers and EDS. Simon holds an Honors Degree in Information Technology from Monash University.

Industry Track - Talk 4:

Fujitsu's Efforts in Cloud Computing

Bala Varadarajan
Managing Director, Fujitsu Australia Software Technology (FAST)

Abstract:

Through our constant pursuit of innovation, the Fujitsu Group aims to contribute to the creation of a networked society that is rewarding and secure, bringing about a prosperous future that fulfills the dreams of people throughout the world. This is the Corporate Vision of Fujitsu.

Fujitsu sees the Cloud as a vehicle for not only optimizing the information and communication technology (ICT) infrastructure of our customers but more importantly as a place to incubate and foster the development of new businesses on cloud platforms.

Fujitsu particularly wants to contribute to future improvements in agriculture, education, energy, medicine, transport and build a strong social infrastructure vital to society. In this way, Fujitsu aims to realize a "Human-Centric Intelligent Society".

I will be providing a brief overview of some of Fujitsu's initiatives and contributions in these areas.

Biography:

Bala Varadarajan is the Managing Director of Fujitsu Australia Software Technology (FAST). Bala has a Bachelor's degree in Engineering and a Master's degree in Management from the Indian Institute of Technology, Madras. He has over 35 years experience in the IT industry, most of which has been in the area of developing software solutions using emerging technologies. The mission of FAST is to undertake research and Development activities in emerging technologies and standards with particular emphasis on the middleware (Service Oriented Architecture) and Cloud technologies. FAST is a development partner of the Fujitsu Software Business Group and works to bring Fujitsu technologies to the international market and build Intellectual Capital.

Day 1: December 5, 2011			
8:00 AM – 9:00 AM	Registration		
9:00 AM – 10:30 AM	Conference Opening Keynote 1 – Energy-Efficient Cloud Computing Professor Professor Albert Zomaya, The University of Sydney, Australia		
10:30 AM – 11:00 AM	Morning Tea		
11:00 AM – 1:00 PM	Regular Papers 1	Tutorial 1	CCSA
Venue: Ballroom A	Regular Papers Session 1: Storage Session Chair: Dr. Sajjad Mahmood, King Fahd University of Petroleum and Minerals, Saudi Arabia		
• Information Dispersion over Redundant Arrays of Optimal Cloud Storage for Desktop Users *Josef Spillner, Alexander Schill, Gerd Bombach, Steffen Matthischke, Johannes Müller and Rico Tzschichholz* • Placement Matters: Replica Placement in Peer-Assisted Storage Clouds *Ahmed Ali-Eldin and Sameh El-Ansary* • Galileo: A Framework for Distributed Storage of High-Throughput Data Streams *Matthew Malensek, Sangmi Lee Pallickara and Shrideep Pallickara* • High-speed storage nodes for the cloud *Nigel Edwards, Mark Watkins, Matt Gates, Alistair Coles, Eric Deliot, Aled Edwards, Anna Fischer, Patrick Goldsack, Tom Hancock, Donagh McCabe, Tim Reddin, JP Sullivan, Peter Toft, and Lawrence Wilcock*			
Venue: Ballroom B	Tutorial 1: Turning Ideas Into Results: Practical Use Of AWS – Amazon Web Services Simon Elisha, Principal Solution Architect, Amazon Web Services		
Venue: Ballroom C	Cloud Computing and Scientific Applications Workshop (Session 1)		
• Resiliency Principles for Emergency Management Systems (Keynote talk) *Dr. Jürg von Känel (Senior Research Manager, IBM Research & Development Australia)* • Implementation and Usability Evaluation of a Cloud Platform for Scientific Computing as a Service (SCaaS) *Prasad Saripalli, Curt Oldenburg, Ben Walters and N. Radheshyam* • Data Transfer Performance of Web Service Workflows in the Cloud Environment *Donglai Zhang, Paul Coddington and Andrew Wendelborn* • Light-weight Cloud Job Management System for Data Intensive Science *Haehyun Kim and Jaegyoon Hahm*			
1:00 PM – 2:00 PM	LUNCH		
2:00 PM – 4:00 PM	Regular Papers 2	Tutorial 2	CCSA
Venue: Ballroom A	Regular Papers Session 2: Data Processing Systems and Security in the Cloud Session Chair: Prof. Albert Zomaya, The University of Sydney, Australia		
• On the Performance of Distributed Clustering Algorithms in File and Streaming Processing Systems *Kathleen Ericson and Shrideep Pallickara* • An Efficient Cross-Match Implementation based on Directed Join Algorithm in MapReduce *Mi Cuncang, Chen Qian and Liu Taoying* • EDoS-Shield - A Two-Steps Mitigation Technique against EDoS Attacks in Cloud Computing			