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CONFERENCE REPORT

A Report on CNSM 2010

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Abstract The 6th International Conference on Network and Service Management (CNSM 2010) was held on October 25–29, 2010 in Niagara Falls, Canada. CNSM is a premier annual conference, sponsored by IEEE Communications Society and IFIP Working Group on Network and Distributed Systems Management, in the general area of network, systems, and service management. Built upon the success starting in 2005 to collocate six management workshops within the same week (MANWEEK), this year we debuted the single track conference CNSM (www.cnsm2010.org).

Keywords Network management · Systems management · Service management

1 Introduction

The 2010 edition of CNSM, the International Conference on Network and Service Management, is a special edition in many aspects. On one hand, it is the continuation of a long tradition of network management events taking place annually in the Fall.

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On the other hand, it is a new incarnation of these events with a new name and structure.

In 1990 the network management community through its technical committees, namely the IFIP working group 6.6 on Network and Distributed Systems Management and the IEEE Communications Society Committee on Network Operations and Management, initiated the DSOM workshop to take place yearly in the fall for discussing work in progress in the area of Distributed Systems Operations and Management. In addition, DSOM allowed active members of the community to justify their travel to attend the IM/NOMS TPC meeting and participate in the selection of the IM/NOMS technical program to take place in the Spring of the following year (IM held in odd years and NOMS in even years, since 1988). DSOM continued successfully until last year celebrating its 20th edition in 2009. Meanwhile, in 1997, MMNS was launched as a forum bringing together networking researchers working on the control plane and those working on the management plane to share their complementary views on the Management of Multimedia Networks and Services. Around the same time, the IPOM workshop was launched to focus on the management of IP networks Operations and Management. Both MMNS and IPOM continued successfully until last year holding their 12 and 9th editions respectively.

Until 2005, DSOM, MMNS and IPOM took place every year in the fall at different times and different locations, which led to the dispersion of our constituents. Therefore, MANWEEK, the International Week on the Management of Networks and Services, was established in 2005 as an umbrella event where the DSOM, MMNS and IPOM workshops were co-located. MANWEEK was successfully organized in Barcelona (Spain) in 2005, Dublin (Ireland) in 2006, San Jose (USA) in 2007, Samos (Greece) in 2008 and Venice (Italy) in 2009. Over the years, MANWEEK also gave birth to a set of new smaller workshops such as Modelling Autonomic Communication Environments (MACE) and End-to-end Virtualization and Grid Management (EVGNM). MANWEEK also continued the DSOM tradition of hosting the IM/NOMS TPC meeting. Together, the workshops and the IM/NOMS TPC meeting lasted for an entire week hence the name "Management Week".

After several years of co-locating the workshops, some taking place in sequence and others in parallel, the time came for merging them into a single conference. CNSM was created with this perspective. Our goal was to establish a highly selective single track conference fostering in-depth technical discussions among the participants. We believe that a single track conference facilitates a better understanding of the relationships between different aspects of management and that advancements presented during CNSM 2010 will influence important research directions in cross-layer management of future networks and services.

2 Program Overview

Organized in a 5 full-day program, CNSM 2010 offered different types of activities and had more than 180 participants. The 3 day main conference was composed of 9 single track technical sessions, as well as 2 keynotes, 1 panel, and 6 poster

sessions co-located with the coffee breaks. The 4th day of the conference was composed of 4 mini-conference sessions and 2 full-day workshops. Finally, we had 1 full-day tutorial and 1 full-day workshop on the 5th day that completed the CNSM 2010 technical program.

In addition to the technical program, CNSM 2010 also hosted 6 committee meetings (CNSM steering committee meeting, CNOM/IFIP WG6.6 meeting, TNSM editorial board meeting, NOMS/IM steering committee meeting, IM 2011 TPC meeting, and IM 2011 OC meeting) and 4 social events (reception, banquet, TPC victory dinner, and IM 2011 OC/TPC dinner).

3 Technical Sessions

This year, we had 176 submissions from all over the world—Africa, Asia, Europe, North America and South America. The papers were reviewed by an excellent program committee with members drawn from industry and academia as well as over 100 additional reviewers. All submitted papers underwent a rigorous review process with an average of 3.6 reviews per paper and a minimum of three reviews for every paper. After paper rebuttals were submitted, TPC discussions took place online through the Journal and Event Management (JEMS) conference management system. This was followed by two TPC Tele-conference meetings on July 29–30, 2010.

Out of 176 paper submissions 27 were accepted as regular papers. This makes for a very competitive acceptance rate of 15%. This was followed by 14 submissions accepted for the mini-conference program for an acceptance rate of 8%. Regrettably, we were unable to include many fine papers due to time limitations. As a result, we had 59 good short papers that were presented in poster sessions making for an acceptance rate of 33.5%. All regular (8 pages), mini-conference (6 pages), and short (4 pages) papers were included in the CNSM 2010 Proceedings and the IEEE Xplore Digital Library. The topics included energy management, cloud management, IT Service management, risk and security management, policy management, enterprise network management, fault management, intrusion detection management, virtualization, sensors and IP management. All these topics were of strong interest to the audience as evidenced by the lively discussion during the Q&A part of the presentations and at the post-conversation during the coffee breaks. The strong interest is a reflection of the broad spectrum of management topics and the desire to build synergies among them.

Based on the content of the papers, reviews and presentations, the best paper selection committee discussed and unanimously selected the Best Paper to be "PRESS: PRedictive Elastic ReSource Scaling for Cloud Systems" by Zhenhuan Gong, XiaohuiGu and John Wilkes, and the Best Student Paper titled "Effective Acquaintance Management for Collaborative Intrusion Detection Networks" by Carol Fung, Jie Zhang, and Raouf Boutaba. The Best Paper describes a resource management system for cloud infrastructures that makes use of two predictive techniques for resource needs. The experiments are clearly described and show the effectiveness of the resource management system. The Best Student Paper focuses

on determining the correctness of information sent by each node in a collaborative environment using a Bayesian environment.

4 Keynotes and Panels

The CNSM 2010 program featured two engaging keynote talks. Dr. Maheswaran Surendra, Director of services management from IBM, opened the conference with a keynote on "IT Service Management and Delivery for an Enterprise." In this talk he presented an overview of IT from the Service Delivery perspective. While this included the typical considerations of systems management, it also introduced new considerations, including how to manage service transition and steady-state, with a focus on continual improvement for productivity and quality.

The keynote from Professor Alberto Leon-Garcia, noted Canadian network expert from the University of Toronto, is titled "Designing the Future Network." In this talk, he presented an overview of the research work to design networks where new applications can be readily deployed on a converged pool of computing, communications, and storage resources that are managed by autonomic management systems.

CNSM 2010 also featured a state-of-the-art panel on the management of the cloud infrastructure titled "Cloud computing management: where next?" It was organized by Thierry Coupaye and Prosper Chemouil (both from Orange Labs, France). The panel members included Marcus Brunner (NEC Europe, Germany), Jonathan Bryce (Rackspace, USA), Michelle Sibilla (IRIT, France) and Vanish Talwar (HP Labs, USA). One of the controversies that arose is the role of cross-layer management. Some panellists strongly supported the use of cross-layer management while others felt that the current abstractions were sufficient and that cross-layer management should be limited. All panellists thought that understanding the role between business models and cloud management needs to be better understood.

5 Tutorial and Workshops

Our single tutorial, titled "Mathematical Models for Network and Service Management," explored different types of modeling techniques that can be used in management modeling and decision making. The full-day tutorial consisted of 4 sessions. The Control Theory session (Xiaoyun Zhu, VMware Inc., USA) discussed the techniques to model system dynamics and to adjust tuning parameters. The focus of the Optimization Models session (Asser N. Tantawi, IBM T.J. Watson Research Center, USA) was on the formulation of an optimization model for network and cloud management problems, and tools that can be used to solve these problems. The third session was on Machine Learning (Paul Ward, University of Waterloo, Canada), which overviewed the machine learning techniques useful in making effective decisions based on previous behaviour of the system. The last

session, Performance Models (Ravi Mazumdar, University of Waterloo, Canada), focused on how to develop performance models for flow-based architectures.

CNSM 2010 also had three co-located workshops: The 1st International Workshop on Network Embedded Management and Applications (NEMA), the 5th International Workshop on Modeling Autonomic Communication Environments (MACE), and the 4th International DMTF Academic Alliance Workshop on Systems and Virtualization Management: Standards and the Cloud (SVM).

6 Concluding Comments

We believe CNSM 2010 activities formed a very exciting set of research work that enabled authors, presenters and attendees to exchange valuable experiences that will advance the state of cross-layer management. This will continue with the next edition of CNSM 2011 to be held in Paris France in October 2011.

Acknowledgments CNSM 2010 would have not been possible without the tireless efforts of many people. First, and most importantly, we thank all of the authors for their creative and compelling research. We also thank the technical program committee and external reviewers for their hard work on ensuring paper quality. Finally, we thank the organizing committee that included Karthick Ramachandran (Web Maintainer), Jin Xiao (Finance Chair), Deep Medhi (Publications Chair), and Carlos Westphall (Publicity Chair). The tremendous amount of work they put in made this conference a great success as unanimously acknowledged through the survey filled electronically by the attendees after the conference.

Author Biographies

Yixin Diao is a Research Staff Member at the IBM Thomas J Watson Research Center in Hawthorne, New York. He received his Ph.D. degree in Electrical Engineering from Ohio State University in 2000. He has published more than sixty papers in systems and services management, and is the co-author of the book "Feedback Control of Computing Systems" (Wiley 2004). He received the IBM Outstanding Innovation Award (2005), was named to IBM Master Inventor (2007), and received Best Paper Awards from NOMS (2002), International Federation of Automatic Control (IFAC 2002–2005), and IEEE International Conference on Services Computing (SCC 2008). He is a Senior Member of IEEE, an Associate Editor for JNSM and JCEE, and a Steering Committee Member for the IEEE International Workshop on Feedback Control Implementation and Design in Computing Systems and Networks (FeBID). He was Program Chair of FeBID 2007, workshop co-organizer of the Workshop on Adaptive Methods in Autonomic Computing Systems (AMACS 2007), and Program Co-Chair of CNSM 2010.

Hanan Lutfiyya is a Professor in the Department of Computer Science at the University of Western Ontario in London Ontario Canada. Her research interests include management and monitoring of large computing systems (e.g., clouds, enterprise computing systems), using policies to support adaptive management and mobile computing. Professor Lutfiyya has more than 150 publications in journals, conferences and workshops in these areas. Professor Lutfiyya has organized and served on many international conferences and workshops and is currently on the Steering Committee for the Symposium on Policies for Distributed Systems and Networks. She was awarded a University of Western Ontario Faculty Scholar Award in 2006.

Noura Liman received the B.S. degree from the National School of Computer Science (Tunisia), in 2001, and the MSc. and Ph.D. degrees from the University of Paris VI (France), in 2002 and 2007 respectively. She is currently a Postdoctoral Fellow at the Division of IT Convergence Engineering, POSTECH (Republic of South Korea). Formerly, she was a researcher at Ucopia Communications Inc. (France), and a research assistant at the School of Computer Science at the University of Waterloo (Canada). She received the IEEE Fred W. Ellersick Paper Prize in 2008. Her research interests include service management, service engineering and service-oriented architectures.

Raouf Boutaba is a professor of computer science at the University of Waterloo. His research interests include network, resource and service management. He is the Chair the Technical Committee on Autonomic Communications and served as the chair of the IEEE Communications Society Technical Committee on Information Infrastructure. He is the founding Editor-in-Chief of the IEEE Transactions on Network and Service Management and on the editorial boards of other journals. He acted as the general or program chair for a number of IEEE and IFIP conferences. He received several best paper awards and other recognitions such as the Premier's Research Excellence Award, the IEEE Hal Sobol Award in 2007, the Fred W. Ellersick Prize in 2008, the Joe LociCero award and the Dan Stokesbury in 2009.