

Managing Next Generation Networks and Services: A Report on APNOMS 2007

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Abstract This article presents a report on APNOMS 2007, which was held October 10–12, 2007 in Sapporo, Japan. The theme of APNOMS 2007 was “Managing the Next Generation Networks and Services.”

Keywords Network operations and management · Next generation networks and services · NGN management

1 Introduction

The 10th Asia-Pacific Network Operations and Management Symposium (APNOMS 2007, <http://www.apnoms.org/2007>) was held on October 10–12, 2007 in Sapporo, Japan. APNOMS 2007 was organized by IEICE TM (Institute of

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Electronics, Information and Communication Engineers, Telecommunication Management) Committee and KICS KNOM (Korea Information and Communications Society, Korean Network Operations and Management Committee) with support from IEEE CNOM (Committee on Network Operations and Management), IEEE APB (Asia Pacific Board), IEEE ComSoc Japan Chapter, TMF (TeleManagement Forum), and IFIP WG 6.6. APNOMS 2007 has continued to play an important role for exchanging and discussing all aspects of telecommunications management among academic and telecommunication industry at large in the Asia-Pacific region. As in the previous APNOMS symposia [1–9], APNOMS 2007 was a great success, attracting over 170 researchers, practitioners, service providers, and vendors from 14 countries.

The theme of this symposium was “Managing Next Generation Networks and Services.” The importance of network operations and management has been discussed for more than 10 years since the first APNOMS in 1997, and now its importance has increased dramatically due to the introduction of next generation networks (NGNs). NGNs provide service flexibility for users by implementing many levels of services on a variety of networks including wireless networks and even ad-hoc networks. Managing NGNs is a huge challenge and requires a lot of effort to achieve this service flexibility as well as to enable new services, such as IPTV and multimedia group communications. These services require a high level of QoS management which is a key factor of NGNs and is achieved by management features of NGNs. The operation system is not only a support system but also a service creation mechanism when NGNs are established. Provisioning for ubiquitous multimedia services on the broadband convergence networks, and well-designed and implemented network operations and management functions with QoS-guaranteed traffic engineering are essential. With this background, this symposium focused on the theme of managing next generation networks and services.

As synopsised below, the APNOMS 2007 program included tutorials, keynote presentations, technical paper and poster sessions, innovation sessions, special sessions, exhibition sessions and a distinguished experts panel.

2 Tutorials

The symposium started with four tutorials covering the latest hot topics. Taesang Choi (ETRI, Korea) gave a tutorial on “Accounting, Charging, and Billing Technologies and Standards for NGN.” Hiroki Horiuchi (KDDI R&D Laboratories, Japan) gave a tutorial on “IP Converged Network and FMBC Services.” Marat Zhanikeev (Waseda Univ., Japan) gave a tutorial on “Network Performance Perception in the Framework of NGN.” Young-Tak Kim (Yeungnam University, Korea) gave a tutorial on “Management for QoS-guaranteed Real-time Multimedia Service Provisioning in MIH (Media Independent Handover) Environment.” They attracted many participants and generated discussions on the issues of managing NGN technologies and services.

3 Keynotes

Four keynote speakers shared their visions at the symposium. Koichi Asatani (Kogakuin University, Japan), delivered a speech on “Next Generation Networks—Dream or Reality,” and emphasized that NGN accelerates the convergence of *Telecomism* and *Internetism*. He also introduced current activities on NGN-related standardizations and field trials promoted in Japan. Yoon-Hak Bang (KT, Korea), gave a speech on “Innovative Network Operations and Management for Converged and Unmanned Operation Environment.” He introduced “NOM 2.0—Network Operations Management 2.0” which enables agile, automated, and intelligent operations for converged services. Luoming Meng (BUPT, China), gave a speech through a live Internet video conferencing from Beijing, China on “Manageability for Connectionless Network of NGN: Concept, Modeling and Application,” and stressed that management information modeling would become a key to improve the manageability in NGN. Doug Zuckerman (Telcordia, USA), gave a speech on “Optical Control Plane—Management Included,” and introduced that the Optical Control Plane which realizes a seamless interoperability in cross-domain optical networks. He also introduced current standardization activities and world-wide testbeds/demos of control plane management.

4 Technical, Short and Innovation Sessions

The main body of the Symposium consisted of 10 technical sessions, one short paper session, and two poster sessions. From a total of 163 paper submissions to the technical session, 48 were selected as full papers with oral presentations in the 10 technical sessions and 30 were selected as short papers with poster-style presentations. Accepted papers and posters represented the latest results of research and development in the operations and management of convergence networks and services, covering research areas including: Management of Distributed Networks, Network Configuration and Planning, Network Security Management (two sessions), Sensor and Ad-hoc Networks, Network Monitoring (two sessions), Routing and Traffic Engineering, Management of Wireless Networks, and Security of Wireless Networks. Many papers focused on the management of broadband wireless access networks and network security management. Also, this year, new sessions called the innovation sessions were organized to present and to discuss ongoing research, work-in-progress ideas, practical solutions, experimental studies, and any topic of interest to the community. Eleven papers were selected and presented in the innovation sessions, which include a prototype of RFID pair detecting, policy-based QoS management framework, VoIP QoS monitoring, visualization-based support system for network operations, and technique for remote management behind NAT router.

5 Special Sessions

Two special sessions were held on the second day and the third day of the symposium. Eight representatives of various countries from Asia-Pacific discussed

“NGN: Technical and Social Challenge in Japan” and “Emerging Technology and Services toward NGN.” Taesang Choi, (ETRI, Korea), Kazumitsu Maki (Fujitsu, Japan), and Yan Ma (BUPT, China) were the organizers of these sessions. On the second day, four speakers in Japan gave talks on current activities and future directions for NGN in Japan. Tomohiro Otani (KDDI R&D Labs.) gave a talk on “Multi-layer network control and management for next generation IP/optical network,” and presented that the border-peer router model is most realistic for multi-layer network management, introduced the integrated network management system architecture for IP/Optical integrated network. Takashi Matsumoto (NEC Corporation, Japan) gave a speech on “NGN: NEC’s View and Solutions,” and introduced that NEC’s product lineup now provides total (full-line and full-layer) support for NGN. Kazuyoshi Kumatani (Fujitsu Limited, Japan) gave a talk on “Next Generation Network: Technology and its Future Challenge.” He introduced the lineup of Fujitsu’s NGN-related products, and expressed that “efficiency” would be the third value in addition to long distance and high capacity. Tatsuro Takahashi (Kyoto Univ., Japan) gave a speech on “NGN: its darkness and brightness,” and emphasized that four roles (new service, security, availability, and ecology) would be important for success of NGN. On the third day, four speakers gave talks on technologies and services toward NGN. Ki Yong Cho (KT, Korea) gave a talk on “IPTV Service Quality Management Trends,” and introduced current techniques for quality measurements of IPTV. Won-Jin Park (KTF, Korea) gave a talk on “KTF’s 3.5G (HSDPA) launching story and future plan,” and presented the current status on KTF’s WCDMA (HSDPA) service and introduced mobile payment system (M-payment project). Shuang-Mei Wang (Telecom Labs Chunghwa Telecom, Chinese Taipei) gave a talk on “Next Generation resource provisioning,” and presented about resource provisioning in eTOM (enhanced Telecom Operations Map). Umberto Vizcaino (HP, Singapore) gave a talk on “NGN & NGS—Their Implications to OSS/BSS tools,” and stressed that Network Operations, Administration & Maintenance (OA&M) structure would achieve high efficiency and strong support for NGN.

6 Exhibitions

The exhibition program provided an opportunity for vendors and service providers to exhibit their latest OSS technologies, tools, platforms, products and systems. This program also provided an excellent environment for operators, researchers and academics to interact with vendors. Two companies including NTT Comware and HP Japan participated in the exhibition program.

7 Distinguished Experts Panel

APNOMS 2007 ended with a very exciting distinguished experts panel (DEP) on the symposium’s theme of “Managing Next Generation Networks and Services.” Chaired by Hiroshi Kuriyama, and four panelists, Byung-Deok Chung (KT, Korea),

Satoshi Hasegawa (Cyber Creative Institute Co., Ltd, Japan), Christian Jacquenet (France Telecom, France), and Doug Zuckerman (Telcordia, USA), discussed and debated a large range of issues on the APNOMS 2007 theme. Quality management issues and AAA issues were introduced as key technologies of NGN by the panelists. Some management system architectures were also introduced by them to show how the next generation networks and services would be managed. More than one hour was spent to discuss the symposium's theme, especially functionalities to be implemented for NGN, such as control plane, service management for IMS, QoS/QoE, SOA technologies, and traditional FCAPS. All panelists stressed that the management functionalities would be essential with NGN and services on it. The discussion was concluded to suggest for the audience with research areas to be done in future, such as IP traffic, routing technologies, distributing computing, control plane, generalized quality control, and service management.

8 APNOMS 2007 Best Paper Award

For the first time in the APNOMS history, the APNOMS Steering Committee decided to select and to award best papers from the technical papers. The APNOMS 2007 organizing committee selected the top three papers presented in the technical session for the "Best Paper Award". Before the symposium nine nominees were selected with the highest review scores, and the award committee evaluated the nominees' presentations. The award committee finally selected three papers with the highest overall (paper + presentation) score. Selected papers were "On A Low Security Overhead Mechanism for Secure Multi-path Routing Protocol in Wireless Mesh Network" by Muhammad Shoaib Siddiqui, Obaid Amin Syed, Choong Seon Hong (Kyung Hee Univ., Korea), "Server Support Approach to Zero Configuration of Power Line Communication Modems and Coaxial Cable Modems," by Daisuke Arai, Kiyohito Yoshihara, Akira Idoue, Hiroki Horiuchi (KDDI Labs, Japan), and "Performance Evaluation of a Mobile Agent based Framework for Security Event Management in IP Networks," by Ching-hang Fong, Gerard Parr, Philip Morrow (Univ. of Ulster, UK).

9 Concluding Remarks

In APNOMS 2007, the technical and short paper session papers were published in LNCS (Lecture Note in Computer Science) 4773 by Springer-Verlag. Also, a CD-ROM of the proceedings has been published, which includes all innovation session papers, and presentation materials of keynote speeches, and special sessions.

APNOMS 2007 was a very successful symposium. It was well attended and the feedback on all aspects of the symposium organization, in particular, on the technical program was very positive. It contributed to the growth of APNOMS into a very important international symposium. The audience's feedback reinforced the positive aspects of the symposium: a good mixed participation from both the

industry and academia in technical contributions; the tradition of special sessions focusing on experiences and lessons learned by different countries in this region; excellent venue and social events; and the overall collaborative, interactive and friendly atmosphere of the symposium.

The keynote and DEP presentations as well as the pictures taken at the symposium are all available from the symposium website: <http://www.apnoms.org/2007>.

APNOMS 2008 will be held October 22–24, 2008 in Beijing, China. For more information, please visit <http://www.apnoms.org/2008>.

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Choong Seon Hong received his B.S. and M.S. degrees in electronic engineering from Kyung Hee University, Korea, in 1983 and 1985, respectively. In 1988 he joined KT, where he worked on Broadband Networks as a member of the technical staff. From September 1993, he joined Keio University, Japan. He received the Ph.D. degree at Keio University in March 1997. Since September 1999, he has been working as a professor in the Department of Computer Engineering, Kyung Hee University. His research interests include ad hoc networks, network security and network management. He is a member of the IEEE, IEICE, IPSJ, KIPS, KICS and KIISE.