REPORT

Integrated Management Strategies for the New Millennium – A Report on IM 2001

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The Seventh IEEE/IFIP International Symposium on Integrated Network Management 2001 (IM 2001, *http://www.comsoc.org/confs/im/2001*) took place in Seattle, Washington, USA, May 14-18, 2001. This premier symposium continues the highly regarded series sponsored by the IEEE Communications Society Committee on Network Operations and Management (CNOM), and the International Federation for Information Processing (IFIP) Working Group 6.6 on Management of Networks and Distributed Systems. This was the seventh since the initial one in 1989 in Boston, which was followed by 1991 in Washington DC, 1993 in San Francisco, 1995 in Santa Barbara, 1997 in San Diego and 1999 again in Boston to celebrate its 10 years. This seventh symposium was attended by about 300 participants from around the world.

The theme for IM 2001 was "Integrated Management Strategies for the New Millennium", focusing on the central role integrated management plays in worldwide information networking. At the dawn of the new millennium, the ubiquitous explosion of the Internet and the fast proliferation of networked devices create a unique challenge. Innovative solutions are required and new ways of strategic thinking must be incorporated into future management products and services. Management in this new information era should support the integration of data and telecommunication networks, from narrowband to broadband, terrestrial to satellite, fixed to mobile and uni-media to multimedia.

The IM 2001 Technical Program Committee (TPC) followed through on this theme by assembling a technical program covering key aspects of integrated management in the new networked era. There have been sessions to cover emerging areas of interest such as IP management, cellular network management, active and programmable network management, mobile code, and pricing. At the same time, the program accommodated continuing strong interest in popular areas with sessions on event and fault management, service and SLA management, virtual private network management, SNMP, CORBA, etc. In addition, for the first time there has been a session on open source management software to accommodate the voice of community that had not previously participated explicitly in the technical program.

IM 2001 attracted 155 papers from around the world, continuing the strong attention this symposium attracts every time it is held. The selection process was quite rigorous: each paper was assessed by four international experts and then was also assessed by the TPC. From these submissions we selected 51 papers arranged in 17 sessions. We also selected 3 open source papers from 5 invited submissions, which formed another session; there has also been an open source corner in which authors could demonstrate their software. Finally, we selected 13 posters with on-going work in various areas,

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covering the latest ideas and methodologies. For the first time, posters were presented in two sessions: one session in parallel with the other sessions of the technical program, with each presenter giving a 7 minute viewgraph-based presentation – this session was immensely popular; and also the traditional poster session, with each author answering questions in front of their poster presentation. Five panels covered some of the hottest topics in integrated management, namely Managing SLAs and Charging for Quality of Service, Managing the Integration of IP and Optical Networks, Comparing WBEM and SNMP, Comparing SNMP and COPS for Configuration Management and finally questioning if Pervasive Computing Will Be Manageable. Even after a full day's participation in technical, panel and poster sessions, many eager participants attended a number of birds-of-a-feather sessions (BoFs) that resulted in active, interesting debate. In summary, this was a high-quality and well-integrated program that struck the right balance between traditional and emerging topics of interest in this area.

IM 2001 also offered 14 tutorials on some of the hottest topics in integrated management. The topics included Management Platforms, Management of SLAs, Event Correlation Technologies, Designing for Effective Event Management, Java Management Extensions, Jini-Based Management, Internet Management Protocols, Policy-based Management, Common Information Model, Directory Enabled Networks, Control and Management of IP-over-Optical Networks, Active Techniques in Network Management, Security Management and Virtual Private Networks.

Distinguished speakers delivered keynote speeches that were both visionary and exciting. The keynote speakers included Roberto Saracco (Telecom Italia, Italy) who talked about the future of communications, asking about managing what and how, casting doubts and stimulating divergent thinking. David Thomson (Microsoft, USA) talked about managing the new Internet environment, meeting the dramatic and dynamic demands of scale it poses. Ira Machevsky (Odeon Capital Partners, USA) talked about the history of venture capital in Internet time, looking at the recent past, present and considering the future.

IM 2001 concluded its program with a Distinguished Experts Panel session. The panel moderator was J. Scott Marcus (Genuity, USA) and the panelists were Jeffrey Case (SNMP Research, USA), Zbigniew Opalka (Axiowave Networks, USA), Tony Confrey (Sonus Networks, USA), Richard Lau (Telcordia, USA) and Salah Aidarous (NEC, USA). The subject was "Advanced Services in Converged Networks – Are they Really Manageable" and each panelist presented their views, with interesting confrontation of arguments and finally a long string of questions from the audience which was very active and seemed to have enjoyed the preceding discussion.

Overall, we were pleased to observe that Integrated Network Management continues to be an area that attracts strong interest from researchers and practitioners alike. In the last 5 years we have witnessed the proliferation of the Internet and internet-based services, new network infrastructure such as all-optical networks, 3rd generation wireless, local access technologies like DSL and cable, etc. Network and service management has proven to be a fundamental building block behind the rapid evolution of the telecommunications industry. Following the tradition of the past IM's, the conference attracted the latest ideas and results from the hottest areas in the last 2 years and received outstanding remarks from the attendees for its carefully selected technical program.

We would like to express our gratitude to all the members of the IM 2001 organizing and program committee, all participating IEEE Communications Society staff, all session chairs and panel organizers, the keynote speakers and, last but not least, all those who presented the fine technical papers and posters, resulting in a high-quality, stimulating technical program.

Finally, we invite you to attend IM 2003, late March 2003, Colorado Springs, USA (*http://www.comsoc.org/confs/im/*) and the forthcoming Networks Operation and Management Symposium (NOMS) 2002, April 15-19, 2002, Florence, Italy (*http://www.comsoc.org/confs/noms/*). Note that IM and NOMS are related symposia, with IM held in odd-numbered and NOMS in even-numbered years.

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