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Daniel Reed
Wenbin Jiang (Eds.)

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Preface

These proceedings contain the papers presented at the 2005 IFIP International Conference on Network and Parallel Computing (NPC 2005), held in Beijing, China, between November 30 and December 3, 2005. The goal of the conference was to establish an international forum for engineers and scientists to present their ideas and experiences in network and parallel computing.

A total of 320 submissions were received in response to our Call for Papers. These papers were from the following countries or regions: Australia, Canada, China, France, Germany, Hong Kong, India, Iran, Italy, Japan, Korea, Luxembourg, Nepal, Netherlands, Taiwan, United Arab Emirates, and United States. Each submission was sent to at least three reviewers. Each paper was judged according to its originality, innovation, readability, and relevance to the expected audience. Based on the reviews received, a total of 68 papers were retained for inclusion in the proceedings. Among the 68 papers, 48 were accepted as full papers for presentation at the conference. We also accepted 20 papers as short papers for a possible brief presentation at the conference, followed by discussion during a poster session. Thus, only 21% of the total submissions could be included in the final program.

The IFIP NPC conference emerged from initial email exchanges between Kemal Ebcioglu, Guojie Li, and Guang R. Gao in the year 2002, with a vision toward establishing a new, truly international conference for fostering research and collaboration in parallel computing. We are happy to see that the NPC conference, with its eminent team of organizers, and its high-quality technical program, is well on its way to becoming a flagship conference of IFIP.

We wish to thank the contributions of the other members of the Organizing Committee. We thank the Publicity Chair, Cho-Li Wang, for his hard work to publicize NPC 2005 under a very tight schedule.

We are deeply grateful to the Program Committee members. The large number of submissions received and the diversified topics made this review process a particularly challenging one.

July 2005

Hai Jin
Daniel Reed

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Table of Contents

Special Session on Grid and System Software

TeraGrid: A Foundation for US Cyberinfrastructure <i>Charles E. Catlett</i>	1
Globus Toolkit Version 4: Software for Service-Oriented Systems <i>Ian Foster</i>	2
System Software for China National Grid <i>Li Zha, Wei Li, Haiyan Yu, Xianghui Xie, Nong Xiao, Zhiwei Xu</i>	14

Session 1: Grid Computing

CGSV: An Adaptable Stream-Integrated Grid Monitoring System <i>Weimin Zheng, Lin Liu, Meizhi Hu, Yongwei Wu, Liangjie Li, Feng He, Jing Tie</i>	22
Performance Modeling and Analysis for Resource Scheduling in Data Grids <i>Yajuan Li, Chuang Lin, Quanlin Li, Zhiguang Shan</i>	32
Study on π -Calculus Based Equipment Grid Service Chain Model <i>Yuesuan Wang, Cheng Wu, Ke Xu</i>	40
A Performance-Based Parallel Loop Self-scheduling on Grid Computing Environments <i>Wen-Chung Shih, Chao-Tung Yang, Shian-Shyong Tseng</i>	48
A Resource-Based Server Performance Control for Grid Computing Systems <i>Naixue Xiong, Xavier Défago, Yanxiang He, Yan Yang</i>	56
IBP: An Index-Based XML Parser Model <i>Haihui Zhang, Xingshe Zhou, Yang Gang, Xiaojun Wu</i>	65
A Stochastic Control Model for Hierarchical Grid Service <i>Zhimin Tian, Li Liu, Yang Yang, Zhengli Zhai</i>	72

Service-Based Grid Resource Monitoring with Common Information Model	
<i>Hongyan Mao, Linpeng Huang, Minglu Li</i>	80
Distributed Gridflow Model and Implementation	
<i>Cheng Bo, Qihe Liu, Guowei Yang</i>	84
Session 2: Peer-to-Peer Computing	
A Secure P2P Video Conference System for Enterprise Environments	
<i>Fuwen Liu, Hartmut Koenig</i>	88
Adaptive Query-Caching in Peer-to-Peer Systems	
<i>Zuoning Yin, Hai Jin, Chao Zhang, Quan Yuan, Chucheng Zhao</i> ...	97
Design and Deployment of Locality-Aware Overlay Multicast Protocol for Live Streaming Services	
<i>Xuping Tu, Hai Jin, Dafu Deng, Chao Zhang, Quan Yuan</i>	105
Session 3: Web Techniques	
Dynamic Thread Management in Kernel Pipeline Web Server	
<i>Shan-Shan Li, Xiang-Ke Liao, Yu-Song Tan, Jin-Yuan Liu</i>	113
QoS Aware Service Composition with Multiple Quality Constraints	
<i>Bixin Liu, Quanyuan Wu, Yan Jia, Bin Zhou</i>	123
Session 4: Cluster Computing	
Performance Modelling and Optimization of Memory Access on Cellular Computer Architecture Cyclops64	
<i>Yanwei Niu, Ziang Hu, Kenneth Barner, Guang R. Gao</i>	132
TCP-ABC: From Multiple TCP Connections to Atomic Broadcasting	
<i>Zhiyuan Shao, Hai Jin, Wenbin Jiang, Bin Cheng</i>	144
A Parallel File System Based on Spatial Information Object	
<i>Keying Huang, Guoqing Li, Dingsheng Liu, Wenyi Zhang</i>	153
Topology-Aware Multi-cluster Architecture Based on Efficient Index Techniques	
<i>Yun He, Qi Zhao, Jianzhong Zhang, Gongyi Wu</i>	163

A Parallel Routing Algorithm on Circulant Networks Employing the Hamiltonian Circuit Latin Square <i>Dongkil Tak, Yongeun Bae, Chunkyun Youn, Ilyong Chung</i>	172
---	-----

An Efficient Load Balancing Algorithm for Cluster System <i>Chunkyun Youn, Ilyoung Chung</i>	176
---	-----

Session 5: Parallel Programming and Environment

A Greedy Algorithm for Capacity-Constrained Surrogate Placement in CDNs <i>Yifeng Chen, Yanxiang He, Jiannong Cao, Jie Wu</i>	180
--	-----

An Improved Scheme of Wavelength Assignment for Parallel FFT Communication Pattern on a Class of Regular Optical Networks <i>Yawen Chen, Hong Shen</i>	189
---	-----

A Parallel $O(n2^{7n/8})$ Time-Memory-Processor Tradeoff for Knapsack-Like Problems <i>Ken-Li Li, Ren-Fa Li, Yang Lei, Yan-Tao Zhou</i>	197
--	-----

Improving Parallelism of Nested Loops with Non-uniform Dependences <i>Sam Jin Jeong, Kun Hee Han</i>	205
---	-----

A Static Data Dependence Analysis Approach for Software Pipelining <i>Lin Qiao, Weitong Huang, Zhizhong Tang</i>	213
---	-----

A Dynamic Data Dependence Analysis Approach for Software Pipelining <i>Lin Qiao, Weitong Huang, Zhizhong Tang</i>	221
--	-----

A Parallel and Distributed Method for Computing High Dimensional MOLAP <i>Kongfa Hu, Ling Chen, Qi Gu, Bin Li, Yisheng Dong</i>	229
--	-----

An Improved ACO Algorithm for Multicast Routing <i>Ziqiang Wang, Dexian Zhang</i>	238
--	-----

Performance Modelling of Pipelined Circuit Switching in Torus with Hot Spot Traffic <i>Farzad Safaei, Ahmad Khonsari, Mahmood Fathy, Mohamed Ould-Khaoua</i>	245
---	-----

An Incremental Compilation Approach for OpenMP Applications <i>Maurizio Giordano, Mario Mango Furnari</i>	249
--	-----

Enhanced Congestion Control Algorithm for High-Speed TCP <i>Young-Soo Choi, Sung-Hyup Lee, You-Ze Cho</i>	253
Advanced Software On-Demand Based on Functional Streaming <i>Jeong Min Shim, Won Young Kim, Wan Choi</i>	257
Can Out-of-Order Instruction Execution in Multiprocessors Be Made Sequentially Consistent? <i>Lisa Higham, Jalal Kawash</i>	261
Efficiently Passive Monitoring Flow Bandwidth <i>Zhiping Cai, Jianping Yin, Fang Liu, Xianghui Liu, Shaohe Lv</i>	266
A Heuristic for Scheduling Parallel Programs with Synchronous Communication Model in the Network Computing Environments <i>Mingyu Zhao, Tianwen Zhang</i>	270
A Formal Model for Network Processor Workload <i>Zhang Xiao Ming, Sun Zhi Gang, Zhang Min Xuan</i>	274
Coping with Data Dependencies of Multi-dimensional Array References <i>Lin Qiao, Weitong Huang, Zhizhong Tang</i>	278
Session 6: Network Architecture	
QoS-Based Dynamic Channel Allocation for GSM/GPRS Networks <i>Jun Zheng, Emma Regentova</i>	285
Distributed Active Measuring Link Bandwidth in IP Networks <i>Zhiping Cai, Jianping Yin, Fang Liu, Xianghui Liu, Shaohe Lv</i>	295
Preferential Bandwidth Allocation for Short Flows with Active Queue Management <i>Heying Zhang, Liu Lu, Liquan Xiao, Wenhua Dou</i>	303
A New Self-tuning Active Queue Management Algorithm Based on Adaptive Control <i>Heying Zhang, Baohong Liu, Liquan Xiao, Wenhua Dou</i>	310
Research on Multi-agent System Automated Negotiation Theory and Model <i>Weijin Jiang, Yusheng Xu, Ding Hao, Shangyou Zhen</i>	317
Adaptive Congestion Control in ATM Networks <i>Farzad Habibipour, Mehdi Galily, Masoum Fardis, Ali Yazdian</i>	321

Session 7: Network Security

Secure Password Pocket for Distributed Web Services <i>Jae Hyung Koo, Dong Hoon Lee</i>	327
The Modified DTW Method for On-Line Automatic Signature Verification <i>Dong Uk Cho, Young Lae J. Bae, Il Seok Ko</i>	335
A Secure On-Demand Routing with Distributed Authentication for Trust-Based Ad Hoc Networks <i>Meng-Yen Hsieh, Yueh-Min Huang</i>	343
Probabilistic Packet Filtering Model to Protect Web Server from DDoS Attacks <i>Jung-Taek Seo, Cheol-Ho Lee, Jungtae Kim, Taeshik Shon, Jongsub Moon</i>	351
An Identity Authentication Protocol for Acknowledgment in IEEE 802.15.4 Network <i>Joon Heo, Choong Seon Hong</i>	355
A Design of the Digital Content Distribution System Based on the Public Key and the Hierarchical Web Caching Structure <i>Yun Ji Na, Ko Il Seok, Gun Heui Han</i>	359

Session 8: Network Storage

Cluster-Aware Cache for Network Attached Storage <i>Bin Cai, Changsheng Xie, Qiang Cao</i>	363
Design and Implementation of a SAN Agent for Windows NT Architecture <i>Ran Meng, Jiwu Shu, Wei Xue</i>	371
MagicStore: A New Out-of-Band Virtualization System in SAN Environments <i>Guangyan Zhang, Jiwu Shu, Wei Xue, Weimin Zheng</i>	379
A Content Delivery Accelerator in Data-Intensive Servers <i>Joon-Woo Cho, Hyun-Jin Choi, Seung-Ho Lim, Kyu-Ho Park</i>	387
A Systematic Scheme to Resolve QoS Dissatisfaction for Storage Cluster <i>Young Jin Nam, Chanik Park</i>	396

Secure Anonymous Communication with Conditional Traceability
Zhaofeng Ma, Xibin Zhao, Guo Zhi, Gu Ming, Jiaguang Sun 405

Session 9: Multimedia Service

Real-Time Video over Programmable Networked Devices
Tien Pham Van 409

A New Raid-Disk Placement Method for Interactive Media Server with
an Accurate Bit Count Control
Yo-Won Jeong, Seung-Ho Lim, Kyu-Ho Park 417

A New Region of Interest Image Coding for Narrowband Network:
Partial Bitplane Alternating Shift
Li-Bao Zhang 425

Using Route Probing to Derive Link Traffic Load with Edge-Based
Measurements
Guofeng Zhao, Tang Hong, Zhang Yi, Shangyu Gu 433

Scheduling Multicast Traffic in a Combined Input Separate Output
Queued Switch
Ximing Hu, Xingming Zhang, Binqiang Wang, Zhengrong Zhao 441

A QoS-Based Scheduling Mechanism for Overlay Aggregate Traffics
*Yunbo Wu, Zhishu Li, Zhihua Chen, Yunhai Wu,
Li Wang, Tun Lu* 449

Session 10: Ubiquitous Computing

Energy Conservation by Peer-to-Peer Relaying in Quasi-Ad Hoc
Networks
Andrew Ka-Ho Leung, Yu-Kwong Kwok 453

Developing Energy-Efficient Topologies and Routing for Wireless
Sensor Networks
Hui Tian, Hong Shen, Teruo Matsuzawa 461

The Efficient Transmission Scheme in Wireless Crypto Communication
Jinkeun Hong, Kihong Kim 470

Constructing k -Connected k -Cover Set in Wireless Sensor Networks
Based on Self-pruning
Jiang Jie, Minghua Han, Guofu Wu, Wenhua Dou 478

GCMPR: Gateway-Centric Multi-path Routing for Internet Connectivity of Wireless Mobile Ad Hoc Network <i>Yongqiang Liu, Wei Yan, Yafei Dai</i>	487
A Semantic and Adaptive Context Model for Ubiquitous Computing <i>Yunting Tang, Qing Wu</i>	495
Research of Survival-Time-Based Dynamic Adaptive Replica Allocation Algorithm in Mobile Ad Hoc Networks <i>Yijie Wang, Yang Kan</i>	503
Author Index	511

TeraGrid: A Foundation for US Cyberinfrastructure

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Abstract. TeraGrid is a collaboration of partners providing a high-performance, nationally distributed capability infrastructure for computational science. The TeraGrid team has utilized multiple surveys of user requirements to develop five-year roadmaps describing new capabilities and services, organized into several new initiatives: *Deep*, *Wide*, and *Open*. TeraGrid is managed by the University of Chicago and includes resources at eight partner sites (Argonne National Laboratory, Indiana University, National Center for Supercomputing Applications, Oak Ridge National Laboratory, Pittsburgh Supercomputing Center, Purdue University, San Diego Supercomputer Center, and Texas Advanced Computing Center).

TeraGrid *Deep* aims to assist scientists with applications that require the combination of multiple leadership class systems- including TeraGrid storage, computing, instruments, visualization, etc. – working in concert. A team of roughly 15 staff is providing hands-on assistance to application teams pursuing TeraGrid *Deep* projects.

TeraGrid *Wide* is a set of partnerships with peer Grid projects and prototype "science gateways" that are aimed at making TeraGrid resources available to, and tailored to, entire communities of users. Science gateways are driving policy, process, and technology standards to enable web portals, desktop applications, campus clusters, and other grid infrastructure projects to seamlessly use TeraGrid resources. Initial TeraGrid science gateway projects include community portals and desktop tools supporting life sciences and biomedicine, high-energy physics, neutron science, astronomy, nanotechnology, atmospheric and climate sciences, and environmental and emergency decision-support.

TeraGrid *Open* involves the rapid evolution of the TeraGrid software and services toward interoperability with peer Grids and campus resources. Currently TeraGrid is partnering with the Open Science Grid as well as partners in Europe (e.g. UK eScience, DEISA) and Asia-Pacific (e.g. Naregi, K*Grid).