Proceedings of

The 2008 IEEE International Conference on Networking, Architecture, and Storage

June 12-14, 2008

Chongqing, China
International Conference on Networking, Architecture, and Storage

NAS 2008

Table of Contents

Message from the General Chairs .............................................................................................................x
Message from the Program Co-Chairs ..................................................................................................xi
Program Committee .........................................................................................................................................xii
Organizing Committee ...................................................................................................................................xiv
Steering Committee ..........................................................................................................................................xv
Reviewers ..............................................................................................................................................................xvi

Session 1A: Storage Security and Reliability
Secure Remote Storage through Authenticated Encryption .............................................................................3
  Fangyong Hou, Dawu Gu, Nong Xiao, and Yuhua Tang
Reliability Assurance of RAID Storage Systems for a Wide Range of Latent Sector Errors ..............................................................10
  Ilias Iliadis and Xiao-Yu Hu
Design and Analysis of a Scalable Third-Party Storage Security Protocol ......................................................20
  Huang Jianzhong, Xie Changsheng, and Zhong Haifeng
Optimal Implementation of Continuous Data Protection (CDP) in Linux Kernel ...............................................28
  Xu Li, Changsheng Xie, and Qing Yang
Fault Surviving Optimisation within Brick Based Storage System ................................................................36
  Connor Gray and Michael Hobbs

Session 1B: Mobile Ad Hoc Network
EBEM: An Event-driven Bandwidth Estimation Method for Mobile Ad Hoc Network ..................................................47
  Heming Cui, Cong Lin, and Yong Xiang
Dynamic Route Diversion in Connectionless Mobile Ad Hoc Networks .........................................................53
  Yao H. Ho, Kien A. Hua, Ning Jiang, and Fei Xie
A Dynamic Congestion Control Based Multipath Routing Protocol for Video Transmission over Ad Hoc Networks .................................................................62
   Yang He, Zhenyong Chen, Yuheng Liu, and Zhang Xiong
Joint Topology-Transparent Scheduling and QoS Routing in Mobile Ad Hoc Networks ....................................................................................................................70
   Yi-Sheng Su, Szu-Lin Su, and Jung-Shian Li

Session 2A: P2P and Replication Service
POND: The Power of Zone Overlapping in DHT Networks .................................................................81
   Zhiyong Xu, Jizhong Han, and Laxmi Bhuyan
Adaptive Consistency Guarantees for Large-Scale Replicated Services .............................................................89
   Yijun Lu, Ying Lu, and Hong Jiang
Applications of Bloom Filters in Peer-to-peer Systems: Issues and Questions ..........................................................97
   Hailong Cai, Ping Ge, and Jun Wang
A Effective Algorithm for Counting Active Flows Based on Loop Bloom Filter ..........................................................104
   Yong Sun, Zhibin Zhang, Li Guo, Shuo Bai, and Jianlong Tan

Session 2B: Network Routing and Message Authentication
The Mobile Router Forwarding Scheme for Multicast in the NEMO ..........................................................113
   Long-Sheng Li, Yong-Yu Yang, and Jhu-Syuan Mei
Hard Real-Time Communication over Multi-hop Switched Ethernet .............................................................121
   Minghu Zhang, Jian Shi, Ting Zhang, and Yong Hu
Efficient Event Matching in Publish/subscribe: Based on Routing Destination and Matching History ..........................................................129
   Xiangfeng Guo, Jun Wei, and Dongli Han
A Novel Authentication Mechanism Based on CGA for BU Message Disposal in Mobile IPv6 ..........................................................137
   Yong Feng, Zhongfu Wu, Jiang Zhong, Chunxiao Ye, and Kaigui Wu

Session 3A: Short Papers I: Network
Formation and Network Chain Control in Sparse Robot ad hoc Networks based on Potential Field ..........................................................147
   Hong Jiang, Yu Qing Huang, and Guo Ying Yang
Peer-assisted Content Delivery Network for Live Streaming: Architecture and Practice ..........................................................149
   Yu Liu, Hao Yin, Guangxi Zhu, and Xueing Liu
A K-hop Based Clustering Algorithm in Ad Hoc Networks ..........................................................151
   Ge He, Shangbo Zhou, and Shan Liu
A Novel Interoperable Model of Distributed UDDI ..........................................................153
   Libing Wu, Yanxiang He, Dan Wu, and Jianqun Cui
A Spam Filter System Based on P2P Architecture ................................................................. 155
    Dafan Dong, Jianzhong Zhang, Ying Wu, Hongbo Lu, and Gongyi Wu

A Dynamic Interface Activation Scheme for Vertical Handoffs ........................................... 157
    Qingyang Song, Xingwei Wang, Zhongfeng Wen, Yao Lv, and Feifei Xu

A Trace-Driven Simulation Study of Load Balancing on Distributed NIDS ............................ 159
    Gu Fengna, Zhang Zhibin, and Wang Lihong

Formal Proof of the IDOP_SP Protocol Based on the Petri Net ........................................... 161
    Yingjiu Guo, Chuang Lin, and Hao Yin

An EPN-based Method for Web Service Composition ............................................................. 163
    Min Gao, Lily Sun, Zhongfu Wu, and Feng Jiang

A Cluster Maintenance Algorithm Based on LEACH-DCHS Protocol ................................ 165
    Yuhua Liu, Jingju Gao, Yongcan Jia, and Longquan Zhu

Towards More Reliable Source Routing in Wireless Networks ............................................ 167
    Imad Jawhar, Zouheir Trabelsi, and Jameela Al-Jaroodi

Session 3B: Short Papers II: Storage and Architecture

Revocation in an Attribute-Based Delegation Model ............................................................... 171
    Chunxiao Ye, Zhongfu Wu, Jiang Zhong, and Yong Feng

Intrusion Detection Based on Density Level Sets Estimation ................................................... 173
    Zhong Jiang, Wen Luosheng, Feng Yong, and Ye Chun Xiao

Design of a Secure Network Mirroring System for Data Sharing .......................................... 175
    Huang Jianzhong, Xie Changsheng, and Zhong Haifeng

A Network Memory Architecture Model and Performance Analysis ...................................... 177
    Li Liu, Mingyu Chen, Yungang Bao, Jianwei Xu, and Jianping Fan

Storage Aware Resource Allocation for Grid Data Streaming Pipelines ................................... 179
    Wen Zhang, Junwei Cao, Yisheng Zhong, Lianchen Liu, and Cheng Wu

A Precise Interrupts Mechanism Based on Micro-Operation Tracing
    of Instruction Boundary for Embedded Processor .............................................................. 181
    Jun Zhang, Xiao-Ya Fan, and Song-He Liu

Design and Implement of Snapshots in Linux Block Level ...................................................... 183
    Huaiyang Li, Changsheng Xie, Yan Liu, and Qiang Cao

An Ontology-based Virtual Storage System ............................................................................. 185
    Zhaobin Liu and Haitao Li

Enabling RDMA Capability of InfiniBand Network for Java Applications ............................. 187
    Wan Huang, Jizhong Han, Jin He, Lisheng Zhang, and Yao Lin

Component-based Network Protocol Architecture for Multi-core ........................................ 189
    Chen Tianzhou, Cao Mingteng, and Shi Qingsong
Session 4A: System Reliability

Accurate Performance Modeling and Guidance to the Adoption of an Inconsistency Detection Framework ...........................................................193

Yijun Lu, Xueming Li, and Hong Jiang

Characterization of Behavior Anomalies in a Representative File System ...........................................................201

Qiang Zou and Dan Feng

Modelling Threshold Secret Sharing Schemes in Ad Hoc Networks ..................................................................................207

Weifeng Chen and Huan Li

A Novel Adaptive Failure Detector for Distributed Systems ...........................................................................215

Dong Tian, Kaigui Wu, and Xueming Li

Session 4B: Network Performance Evaluation

Fibre Channel Arbitrated Loop - Performance Analysis of Loop Tenancy Overhead ..................................................................................................225

Mikkel Hagen and Elizabeth Varki

Experimental Analysis of InfiniBand Transport Services on WAN ...........................................................................233

Weikuan Yu, Nageswara S.V. Rao, and Jeffrey S. Vetter

An Evaluation of Transport Protocols in Peer-to-Peer Media Streaming ...........................................................................241

Jeng-Yuh Chang and Xiao Su

An Energy-Efficient Clustering Technique for Wireless Sensor Networks ...........................................................................248

Guan Xin, Wang YongXin, and Liu Fang

Session 5A: Networked Storage Systems and Data Management

An Analytical Performance Model of IP-SAN ..................................................................................................255

Min Wang, Liu Liu, Wei Xu, and Lu Xu

Spatial-Locality-Aware Virtual Storage Devices with Tangible QoS Expressions ...........................................................................263

Pei Yan and Song Jiang

Goal-based Dependability Analysis and Improvement Framework for Network Storage Systems ...........................................................................271

Hua Wang and Ke Zhou

VDMS: A Vector Data Management System for GIS Applications ...........................................................................278

Xuhui Liu, Shubin Zhang, Jin He, Jizhong Han, Chengde Han, and Zhiyong Xu

Session 5B: Distributed and Multi-Core Systems

Efficient and Locality-aware Resource Management in Wide-area Distributed Systems ...........................................................................287

Haiying Shen, Yingwu Zhu, and Wing-Ning Li

Performance Characterization of a Dual Quad-Core Based Application Oriented Networking System ...........................................................................295

Abdul Waheed, Jianxun Jason Ding, Jingnan Yao, and Laxmi N. Bhuyan
Software Barrier Performance on Dual Quad-Core Opterons ..........................................................303
Jie Chen and William Watson III

A Pollution Alleviative L2 Cache Replacement Policy for Chip Multiprocessor Architecture .................................................................310
Jun Zhang, Xiao-Ya Fan, and Song-He Liu

Session 6A: Memory and Parallel I/O

MemoryIO: An Extended I/O Technology in Embedded Systems .......................................................319
Xiaojun Yang, Tao Liu, Fei Chen, and Hailiang Cheng

Parallel Job Scheduling with Overhead: A Benchmark Study .................................................................326
Richard A. Dutton, Weizhen Mao, Jie Chen, and William Watson III

Rectangularly Multi-Module Memory System with Table-Based Dynamic Addressing Scheme ................334
Jinbo Xu, Yong Dou, and Jie Zhou

An e-Learning Services Discovery Algorithm Based on User Satisfaction .........................................342

Session 6B: Network Security

On the Security of Group Signature Scheme and Designated Verifier Signature Scheme .................................................................351
Jianhong Zhang and Qin Geng

Event-based Trust Framework Model in Wireless Sensor Networks .....................................................359
Haiguang Chen, Huafeng Wu, Jinchu Hu, and Chuanshan Gao

A Novel Embedded Accelerator for Online Detection of Shrew DDoS Attacks ................................365
Hao Chen and Yu Chen

Research on Trust Evaluation Model of Grid Services ........................................................................373
Xiaohua Dong and Zhongfu Wu

Author Index ...............................................................................................................................................381