2011 International Conference on Cloud and Service Computing

(CSC 2011)

Hong Kong, China
12-14 December 2011
# Table of Contents

Message from the General and Program Chairs ................................................................. viii
Message from the Workshop Chair .................................................................................... x
Committee Information ........................................................................................................ xi

## Keynote

SLA-Oriented Resource Provisioning for Cloud Computing: Challenges, Architecture, and Solutions...... 1
Rajkumar Buyya, Saurabh Kumar Garg, and Rodrigo N. Calheiros .................................................. 1

### TS1: Communications in Cloud & Service Computing (I)

Adaptive Resource Management in PaaS Platform Using Feedback Control LRU Algorithm
Rui Hu, Yong Li, Yan Zhang ............................................................................................... 11

An Optimized Approach to Virtualize an Execution Environment for Windows Applications
Hailei Sun, Tianyu Wo ........................................................................................................ 19

Low Redundant Hop-counts for Service Composition Optimization in Dynamic Network
Ibrahima Kalil Toure, Yang Yang, Zhen Qiang Mi and Lei Wang ............................................. 26

Design and Evaluation of a Pub/Sub Service in the Cloud
Wenjing Fang, Beihong Jin, Biao Zhang, Yuwei Yang, Ziyuan Qin ........................................ 32

### TS2: Knowledge & Data Engineering in Cloud & Service Computing (I)

Service-Oriented Architecture for Sharing Private Spatial-Temporal Data
Hani Abusharkh and Benjamin C. M. Fung ........................................................................ 40

Knowledge Reasoning in Health Cloud
Hanbing Deng, Xia Zhang and Jiren Liu ................................................................................ 48

Modeling User’s Preference in Folksonomy for Personalized Search
Zhaowen Tao, Jun Hu, Wei He, Runsheng Li and Deyi Li .................................................... 55

### TS3: Communications in Cloud & Service Computing (II)

Recovery Strategies for Service Composition in Dynamic Network
Lili Sun, Jianwei An, Yang Yang and Ming Zeng .................................................................. 60

Applicability Analysis of Grid Security Mechanisms on Cloud Networking
Rasib Hassan Khan, Miika Komu and Tuomas Aura ......................................................... 65
TS4: Knowledge & Data Engineering in Cloud & Service Computing (II)
Extracting Semantics Relationships for Web Services Based on Wikipedia
Kui Xiao, Kui Yang and Bing Li ................................................................. 71
Behavior Statistics and Social Network Analysis of Online Go Game Players
Sihai Zhang, Zhiwei Song and Zhi Liang.................................................. 77
Visualizing Revisions and Building Semantic Network in Wikipedia
Li Hao, Deyi Li, Runsheng Li, Jun Hu and Dongjie Zhao........................................ 83

TS5: Security, Dependability, Trust & Quality in Cloud & Service Computing (I)
AGARIC - a Hybrid Cloud based Testing Platform
Ji Wu, Chunhui Wang, Yang Liu and Li Zhang ............................................ 87
A Utility-Based Job Scheduling Algorithm for Cloud Computing Considering Reliability Factor
Bo Yang, Xiaofei Xu, Feng Tan and Dong Ho Park...................................... 95

TS6: Architecture, Software, Services & Tools in Cloud & Service Computing (I)
eXCloud: Transparent Runtime Support for Scaling Mobile Applications in Cloud
Ricky K. K. Ma, King Tin Lam and Cho-Li Wang ...................................... 103
Black-Box Approach to Capacity Identification for Multi-Tier Applications Hosted on Virtualized Platforms
Waheed Iqbal, Matthew N. Dailey and David Carrera.................................. 111

TS7: Business Models and Applications of Cloud & Service Computing
A Conceptual Framework for Dynamic Manufacturing Resource Service Composition and Optimization in Service-Oriented Networked Manufacturing
Wei-Ning Liu, Bo Liu and Di-Hua Sun ..................................................... 118
A Research of Resource Provider-Oriented Pricing Mechanism Based on Game Theory in Cloud Bank Model
Huixi Li and Hao Li .................................................................................. 126
A Rate Control Scheme for Distributed High Performance Video Encoding in Cloud
Lihua Zheng, Ling Tian and Yue Wu ......................................................... 131

TS8: Security, Dependability, Trust & Quality in Cloud & Service Computing (II)
Framework for Testing Cloud Platforms and Infrastructures
William Jenkins, Sergiy Vilkomir, Puneet Sharma and George Pirocanac .......... 134
A Privacy-Protecting File System on Public Cloud Storage
Zhonghua Sheng, Zhiqiang Ma, Lin Gu and Ang Li .................................... 141

TS9: Architecture, Software, Services & Tools in Cloud & Service Computing (II)
Fast Saving and Restoring Virtual Machines with Page Compression
Li Deng, Hai Jin, Song Wu, Xuanhui Shi and Jiangfu Zhou.......................... 150
Energy-aware Hierarchical Scheduling of Applications in Large Scale Data Centers
Gaojin Wen, Jue Hong, Chengzhong Xu, Pavan Balaji, Shengzhong Feng and Pingchuan Jiang .......... 158

HadoopRsync
Jiaran Zhang, Xiaohui Yu, You Li and Liwei Lin ................................................................. 166

Virtualization Security for Cloud Computing Service
Shengmei Luo, Zhaoji Lin, Xiaohua Chen, Zhuolin Yang and Jianyong Chen ......................... 174
RandTest: Towards More Secure and Reliable Dataflow Processing in Cloud Computing
Yi Liang, Zhuo Hao, Nenghai Yu and Bin Liu .......................................................................... 180
Multi-objective Optimization Model of Virtual Resources Scheduling Under Cloud Computing and It’s Solution
Jianfeng Zhao, Wenhua Zeng, Min Liu, Guangming Li .......................................................... 185

TS11: Architecture, Software, Services & Tools in Cloud & Service Computing (III)
Characterizing Web Application Performance for Maximizing Service Providers’ Profits in Clouds
Xi Chen, Haopeng Chen, Qing Zheng, Wenting Wang and Guodong Liu ............................... 191
Identifying Prosumer’s Energy Sharing Behaviours for Forming Optimal Prosumer-Communities
A. J. Dinusha Rathnayaka, Vidyasagar M. Potdar, Omar Hussain and Tharam Dillon ............. 199
System Resource Allocation Algorithm for Multi-tenant SaaS Application
Hongyong Yu and Deshuai Wang .......................................................................................... 207

TS12: Security, Dependability, Trust & Quality in Cloud & Service Computing (IV)
Job Sequence Scheduling for Cloud Computing
Yung-Ching Hsu, Pangfeng Liu and Jan-Jan Wu ................................................................. 212
Study on the Third-party Audit in Cloud Storage Service
Ling Li, Lin Xu, Jing Li and Changchun Zhang ...................................................................... 220

TS13: Architecture, Software, Services & Tools in Cloud & Service Computing (IV)
CDebugger: A Scalable Parallel Debugger with Dynamic Communication Topology Configuration
Juncheng Zhang, Zhongzhi Luan, Wenjun Li, Hailong Yang, Junjie Ni, Yuanqiang Huang, Depei Qian. 228
An Effective Data Locality Aware Task Scheduling Method for MapReduce Framework in Heterogeneous Environments
Xiaohong Zhang, Yuhong Feng, Shengzhong Feng, Jianping Fan and Zhong Ming .................. 235
Understand and Replay Cloud Platform SDK with vimShark
John Liang, Aalap Desai, Jin Heo, Xuwen Yu, Joanna Guan and Rajit Kambo ...................... 243

TS14: Security, Dependability, Trust & Quality in Cloud & Service Computing (V)
Social-optimized Win-win Resource Allocation for Self-organizing Cloud
Sheng Di, Cho-Li Wang, Luwei Cheng and Ling Chen .......................................................... 251
<table>
<thead>
<tr>
<th>Title</th>
<th>Authors</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thwarting Audio Steganography Attacks in Cloud Storage Systems</td>
<td>Bo Liu, Erci Xu, Jin Wang, Ziling Wei, Liyang Xu, Baokang Zhao and Jinshu Su</td>
<td>259</td>
</tr>
<tr>
<td>A Statistical based Resource Allocation Scheme in Cloud</td>
<td>Zhenzhong Zhang, Haiyan Wang, Limin Xiao and Li Ruan</td>
<td>266</td>
</tr>
<tr>
<td><strong>TS15: Architecture, Software, Services &amp; Tools in Cloud &amp; Service Computing (V)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Aware Cloud Application Management in Private Cloud Data Center</td>
<td>Li Xu, Guozhen Tan, Xia Zhang and Jingang Zhou</td>
<td>274</td>
</tr>
<tr>
<td>An Industrial SCM Tool based on SaaS Model</td>
<td>Chang Shu, Hongying Gu and Long Zhao</td>
<td>280</td>
</tr>
<tr>
<td>Component-oriented Executable Meta-model for SaaS Applications</td>
<td>Jiong Li, Guangchun Luo and Ling Tian</td>
<td>288</td>
</tr>
<tr>
<td>Virtual Machine Mapping Policy Based on Load Balancing in Private Cloud Environment</td>
<td>Junjie Ni, Yuanqiang Huang, Zhongzhi Luan, Juncheng Zhang and Depei Qian</td>
<td>292</td>
</tr>
<tr>
<td>The Analysis of Security Threats in Structured P2P Load Balancing Schemes</td>
<td>Wei Mi, Xiaofeng Qiu and Chunhong Zhang</td>
<td>296</td>
</tr>
<tr>
<td>Voiceprint-biometric Template Design and Authentication based on Cloud Computing Security</td>
<td>Huahong Zhu, Qianhua He, Hong Tang and Weihua Cao</td>
<td>302</td>
</tr>
<tr>
<td><strong>TS17: Architecture, Software, Services &amp; Tools in Cloud &amp; Service Computing (VI)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSB: Cloud Service Bus based Public SaaS Platform for Small and Median Enterprises</td>
<td>Aobing Sun, Jialin Zhou, Tongkai Ji and Qiang Yue</td>
<td>309</td>
</tr>
<tr>
<td>A Data Placement Algorithm with Binary Weighted Tree on PC Cluster-based Cloud Storage System</td>
<td>Julia Myint and Thinn Thu Naing</td>
<td>315</td>
</tr>
<tr>
<td>NestCloud: Towards Practical Nested Virtualization</td>
<td>Zhenhao Pan, Qing He, Wei Jiang, Yu Chen and Yaozu Dong</td>
<td>321</td>
</tr>
<tr>
<td><strong>The 2011 International Workshop on Data Cloud</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Querying Combined Cloud-based and Relational Databases</td>
<td>Mingpeng Zhu and Tore Risch</td>
<td>330</td>
</tr>
<tr>
<td>NoSQL Evaluation: A Use Case Oriented Survey</td>
<td>Robin Hecht and Stefan Jablonski</td>
<td>336</td>
</tr>
<tr>
<td>Intrusion Analysis with Deep Packet Inspection: Increasing Efficiency of Packet Based Investigations</td>
<td>Daniel Smallwood and Andrew Vance</td>
<td>342</td>
</tr>
<tr>
<td>A Prototype System for Object Management in Private Cloud</td>
<td>Chia Hung Kao and Shin Tze Liu</td>
<td>348</td>
</tr>
</tbody>
</table>
Analysis Farm: A Cloud-based Scalable Aggregation and Query Platform for Network Log Analysis
Jianwen Wei, Yusu Zhao, Kaida Jiang, Rui Xie and Yaohui Jin............................................................ 354

Fault Tolerant Study for Durable Storage on Cloud
Xiaofei Zhang and Lei Chen.................................................................................................................. 360

eStor: Energy Efficient and Resilient Data Center Storage
Bin Lin, Shanshan Li, Xiangke Liao, Qingbo Wu and Shazhou Yang .................................................. 366

Author Index............................................................................................................................................. 372