2017 IEEE 36th Symposium on Reliable Distributed Systems
SRDS 2017
Table of Contents

Message from the General Co-Chairs............................................................................................................ix
Message from the Technical Program
Co-Chairs............................................................................................................................................................x
Organizing Committee.....................................................................................................................................xi
Technical Program Committee.......................................................................................................................xii
External Reviewers.......................................................................................................................................xiii

Session I: Cloud Environments
Fine-Grained Consistency Upgrades for Online Services .................................................................1
Filipe Freitas, João Leitão, Nuno Preguiça, and Rodrigo Rodrigues
A Practical Framework for Privacy-Preserving NoSQL Databases ......................................................11
Ricardo Macedo, João Paulo, Rogério Pontes, Bernardo Portela,
Tiago Oliveira, Miguel Matos, and Rui Oliveira
Parameterized and Runtime-Tunable Snapshot Isolation in Distributed Transactional Key-Value Stores .................................................................21
Hengfeng Wei, Yu Huang, and Jian Lu
Robust Multi-Resource Allocation with Demand Uncertainties in Cloud Scheduler .................................................34
Jianguo Yao, Qiumin Lu, Hans-Arno Jacobsen, and Haibing Guan

Session II: Networks
Stateless Reliable Geocasting .......................................................................................................................44
Jordan Adamek, Mikhail Nesterenko, James Scott Robinson, and Sebastien Tixeuil
Controlling Cascading Failures in Interdependent Networks under Incomplete Knowledge ..................54
Diman Zad Tootaghaj, Novella Bartolini, Hana Khamfroush, and Thomas La Porta
### Session III: Algorithms and Protocols

**On the Robustness of a Neural Network**  
El Mahdi El Mhamdi, Rachid Guerraoui, and Sébastien Rouault  
Page 84

**Automated Fine Tuning of Probabilistic Self-Stabilizing Algorithms**  
Saba Aflaki, Mathias Volk, Borzoo Bonakdarpour, Joost-Pieter Katoen, and Arne Storjohann  
Page 94

**Reconfiguring Parallel State Machine Replication**  
Eduardo Alchieri, Fernando Dotti, Odorico M. Mendizabal, and Fernando Pedone  
Page 104

**A Statistical Framework on Software Aging Modeling with Continuous-Time Hidden Markov Model**  
Hiroyuki Okamura, Junjun Zheng, and Tadashi Dohi  
Page 114

### Session IV: Storage Systems I

**Hybrid-RC: Flexible Erasure Codes with Optimized Recovery Performance and Low Storage Overhead**  
Liuqing Ye, Dan Feng, Yuchong Hu, and Qing Liu  
Page 124

**Correlation-Aware Stripe Organization for Efficient Writes in Erasure-Coded Storage Systems**  
Zhirong Shen, Patrick P.C. Lee, Jiwu Shu, and Wenzhong Guo  
Page 134

**A Simulation Analysis of Reliability in Erasure-Coded Data Centers**  
Mi Zhang, Shujie Han, and Patrick P.C. Lee  
Page 144

**Optimal Storage under Unsynchronized Mobile Byzantine Faults**  
Silvia Bonomi, Antonella Del Pozzo, Maria Potop-Butucaru, and Sébastien Tixeuil  
Page 154

### Session V: Storage Systems II

**PULP: Achieving Privacy and Utility Trade-Off in User Mobility Data**  
Sophie Cerf, Vincent Primault, Antoine Boutet, Sonia Ben Mokhtar, Robert Birke, Sara Bouchenak, Lydia Y. Chen, Nicolas Marchand, and Bogdan Robu  
Page 164

**Incremental Elasticity for NoSQL Data Stores**  
Antonis Papaioannou and Kostas Magoutis  
Page 174
CausalSpartan: Causal Consistency for Distributed Data Stores Using Hybrid Logical Clocks

Mohammad Roohitavaf, Murat Demirbas, and Sandeep Kulkarni

DottedDB: Anti-Entropy without Merkle Trees, Deletes without Tombstones

Ricardo Jorge Tomé Gonçalves, Paulo Sérgio Almeida, Carlos Baquero, and Vítor Fonte

Session VI: Security and Privacy

Optimal Cyber-Defense Strategies for Advanced Persistent Threats: A Game Theoretical Analysis

Jeffrey Acquaviva, Mark Mahon, Bruce Einfalt, and Tom LaPorta

AutoFlowLeaker: Circumventing Web Censorship through Automation Services

Shengtuo Hu, Xiaobo Ma, Muhui Jiang, Xiapu Luo, and Man Ho Au

An Unsupervised Multi-Detector Approach for Identifying Malicious Lateral Movement

Atul Bohara, Mohammad A. Noureddine, Ahmed Fawaz, and William H. Sanders

Optimal Network Reconfiguration for Software Defined Networks Using Shuffle-Based Online MTD

Jin Bum Hong, Seunghyun Yoon, Hyuk Lim, and Dong Seong Kim

Poster Abstracts

A Greedy-Based Method for Modified Condition/Decision Coverage Testing Criterion

Bo-His Li and Chin-Yu Huang

A Resilient Auction Framework for Deadline-Aware Jobs in Cloud Spot Market

Abadhan Saumya Sabyasachi, Hussain Mohammed Dipu Kabir, Ahmed Mohamed Abdelmoniem, and Subrota Kumar Mondal

Automated Resource Sharing for Virtualized GPU with Self-Configuration

Jianguo Yao, Qiumin Lu, and Zhengwei Qi

Performance Modeling of PBFT Consensus Process for Permissioned Blockchain Network (Hyperledger Fabric)

Harish Sukhwani, José M. Martinez, Xiaolin Chang, Kishor S. Trivedi, and Andy Rindos

Detecting TCP-Based DDoS Attacks in Baidu Cloud Computing Data Centers

Jiahui Jiao, Benjun Ye, Yue Zhao, Rebecca J. Stones, Gang Wang, Xiaoguang Liu, Shaoyan Wang, and Guangjun Xie
PITR: An Efficient Single-Failure Recovery Scheme for PIT-Coded Cloud Storage Systems ...............................................................259
   Peng Li, Jiaxiang Dong, Xueda Liu, Gang Wang, Zhongwei Li, and Xiaoguang Liu

PhD Forum Abstracts

Runtime Measurement Architecture for Bytecode Integrity in JVM-Based Cloud ..................................................................................262
   Haihe Ba, Huaizhe Zhou, Jiangchun Ren, and Zhiying Wang

The Use of Side-Channel Attacks on Modern Virtualization Technologies .................................................................264
   Andres Rainiero Hernandez Coronado

An End-To-End Log Management Framework for Distributed Systems .......................................................................................266
   Pinjia He

Fault-Tolerant Pattern Formation by Multiple Robots: A Learning Approach .................................................................268
   Jia Wang, Jiannong Cao, and Shan Jiang

Author Index .................................................................................................................................270