Table of Contents

Preface ............................................................................................................................................. xxviii

Volume I

Section 1
Fundamental Concepts and Theories

This section includes an overview of Cloud Technology, providing readers with a foundation of knowledge for the entirety of this multivolume reference. Cloud computing and other network-based technologies have grown exponentially in recent years, necessitating a thorough understanding of both where the industry has been as well as where it is going. This section explores technologies such as big data, mobile applications, and library information systems, among others. In the opening 16 chapters of this extensive reference source, readers will obtain a clear understanding of the fundamental concepts and theories integral to the field of Cloud Technology.

Chapter 1
Cloud Computing Overview ................................................................................................................... 1
Yushi Shen, Microsoft Corporation, USA
Yale Li, Microsoft Corporation, USA
Ling Wu, EMC2 Corporation, USA
Shaofeng Liu, Microsoft Corporation, USA
Qian Wen, Endronic Corp, USA

Chapter 2
Cloud Computing Terms, Definitions, and Taxonomy ......................................................................... 25
Shamim Hossain, IBM Corporation, Australia

Chapter 3
Cloud Libraries: Issues and Challenges .................................................................................................. 50
Mayank Yuvaraj, Banaras Hindu University, India

Chapter 4
Satish C. Sharma, Maharaja College of Management, India
Harshila Bagoria, Maharaja College of Management, India
Chapter 5
Value Co-Creation in Cloud Services
Ammar Rashid, Auckland University of Technology, New Zealand
William Yu Chung Wang, Auckland University of Technology, New Zealand
Felix B Tan, Auckland University of Technology, New Zealand

Chapter 6
From Mainframe to Cloud
Božidar Radenković, University of Belgrade, Serbia
Petar Kočović, Calisto Adriatic/Gartner, Serbia

Chapter 7
Infrastructure as a Service
Shamim Hossain, IBM Corporation, Australia

Chapter 8
A Survey on Research Initiatives for Healthcare Clouds
Rahul Ghosh, IBM, USA
Ioannis Papapanagiotou, Purdue University, USA
Keerthana Boloor, IBM TJ Watson Research Center, USA

Chapter 9
The Compute Infrastructures for Big Data Analytics
Pethuru Raj, IBM India Pvt Ltd, India

Chapter 10
Accessing Big Data in the Cloud Using Mobile Devices
Haoliang Wang, George Mason University, USA
Wei Liu, University of Rochester, USA
Tolga Soyata, University of Rochester, USA

Chapter 11
Mobile Cloud Computing: Technologies, Services, and Applications
Jorge E. F. Costa, Institute of Telecommunications, University of Beira Interior, Portugal
Joel J. P. C. Rodrigues, Institute of Telecommunications, University of Beira Interior, Portugal

Chapter 12
Energy-Efficiency in a Cloud Computing Backbone
Burak Kantarci, University of Ottawa, Canada
Hussein T. Mouftah, University of Ottawa, Canada
Chapter 13
Testing in the Cloud: Balancing the Value and Risks of Cloud Computing

Randall W. Rice, Rice Consulting Services, USA

Chapter 14
Concolic Test Generation and the Cloud: Deployment and Verification Perspectives

Nikolai Kosmatov, CEA LIST, France

Chapter 15
Cloud Computing Forensics

Mario A. Garcia, Texas A&M University – Corpus Christi, USA

Chapter 16
Legal Process and Requirements for Cloud Forensic Investigations

Ivan Orton, King County Prosecuting Attorney’s Office, USA
Aaron Alva, University of Washington, USA
Barbara Endicott-Popovsky, University of Washington, USA

Section 2
Development and Design Methodologies

This section investigates some of the many policies and procedures in place to make effective use of Cloud Technology. Understanding how to best implement new technologies is a first step in ensuring the efficacy of those technologies. Particular considerations include topics such as data recovery, library/database management, and data privacy, among others. The 16 chapters that make up this section explore the development and design methodologies that bridge the gap between fundamental concepts and real-world applications of Cloud Technology.

Chapter 17
Data Recovery Strategies for Cloud Environments

Theodoros Spyridopoulos, University of Bristol, UK
Vasilios Katos, Democritus University of Thrace, Greece

Chapter 18
A Theoretical Foundation of Demand Driven Web Services

Zhaohao Sun, University of Ballarat, Australia & Hebei Normal University, China
John Yearwood, Federation University, Australia

Chapter 19
Towards Federation and Interoperability of Cloud Storage Systems

Sebastian Dippl, Siemens AG Corporate Technology, Germany
Michael C. Jaeger, Siemens AG Corporate Technology, Germany
Achim Luhn, Siemens AG Corporate Technology, Germany
Alexandra Shulman-Peleg, IBM Haifa Research Lab, Israel
Gil Vernik, IBM Haifa Research Lab, Israel
Chapter 20
Dashboard Services for Pragmatics-Based Interoperability in Cloud and Ubiquitous Manufacturing...435

Luís Ferreira, School of Technology, Polytechnic Institute of Cávado e Ave, Portugal & CGIT Research Centre, University of Minho, Portugal
Goran Putnik, CGIT Research Centre, School of Engineering, University of Minho, Portugal
Maria Manuela Cruz-Cunha, School of Technology, Polytechnic Institute of Cávado e Ave, Portugal & CGIT Research Centre, University of Minho, Portugal
Zlata Putnik, CGIT Research Centre, School of Engineering, University of Minho, Portugal
Hélio Castro, CGIT Research Centre, School of Engineering, University of Minho, Portugal
Catia Alves, CGIT Research Centre, School of Engineering, University of Minho, Portugal
Vaibhav Shah, CGIT Research Centre, School of Engineering, University of Minho, Portugal

Chapter 21
A New Framework for Building Academic Library through Cloud Computing...450

Vijay Parashar, Mody Institute of Technology & Science, India
Mohan Lal Vishwakarma, Mody Institute of Technology & Science, India
Reema Parashar, Mody Institute of Technology & Science, India

Chapter 22
A Cloud-Oriented Reference Architecture to Digital Library Systems...466

K. Palanivel, Pondicherry University, India
S. Kuppuswami, Kongu College of Engineering, India

Chapter 23
Application of Cloud-Based Simulation in Scientific Research...490

Mihailo Marinković, Telenor, Serbia
Sava Čavoški, MDS Information Engineering, Serbia
Aleksandar Marković, University of Belgrade, Serbia

Chapter 24
A Cognitive Access Framework for Security and Privacy Protection in Mobile Cloud Computing...517

Gianmarco Baldini, Joint Research Centre – European Commission, Italy
Pasquale Stirparo, Joint Research Centre – European Commission, Italy

Chapter 25
A Framework for Compliance and Security Coverage Estimation for Cloud Services: A Cloud Insurance Model...543

Dipankar Dasgupta, University of Memphis, USA
Durdana Naseem, University of Memphis, USA

Chapter 26
Designing a Forensic-Enabling Cloud Ecosystem...566

Keyun Ruan, University College Dublin, Ireland
Chapter 27
Cloud Environment Controls Assessment Framework ........................................................... 580
Bharat Shah, Lockheed Martin Corporation, USA

Volume II

Chapter 28
A Stable Matching Algorithm for VM Migration to Improve Energy Consumption and QOS in Cloud Infrastructures .................................................................................................................. 606
Abdelaziz Kella, University of Oran, Algeria
Ghalem Belalem, University of Oran, Algeria

Chapter 29
Addressing Device-Based Adaptation of Services: A Model Driven Web Service Oriented Development Approach .................................................................................................................. 624
Achilleas P. Achilleos, University of Cyprus, Cyprus
Kun Yang, University of Essex, UK
George A. Papadopoulos, University of Cyprus, Cyprus

Chapter 30
Cloud Computing Networks: Utilizing the Content Delivery Network.................................. 648
Yale Li, Microsoft Corporation, USA
Yushi Shen, Microsoft Corporation, USA
Yudong Liu, Western Washington University, USA

Chapter 31
SaaS Requirements Engineering for Agile Development ........................................................... 660
Asif Qumer Gill, University of Sydney, Australia
Deborah Bunker, University of Sydney, Australia

Chapter 32
Experiences with Cloud Technology to Realize Software Testing Factories .......................... 689
Alan W. Brown, IBM Rational and University of Surrey, UK

Section 3
Tools and Technologies

This section focuses on the software aspect of Cloud Technology and how networks, databases, and platforms can be utilized to securely store and process information. While the cloud may seem simple from a user's perspective, many advanced technologies go into making cloud systems possible. In particular, software, networks, and databases must be effectively maintained, in addition to security and privacy concerns that are constantly at the forefront of this technology. With 12 chapters, this section offers a broad treatment of some of the many tools and technologies within Cloud Technology.

Chapter 33
Cloud-Enabled Software Testing Based on Program Understanding ........................................ 717
Chia-Chu Chiang, University of Arkansas at Little Rock, USA
Shucheng Yu, University of Arkansas at Little Rock, USA
Chapter 34
Testbed Platform: Amazon Web Services for Library ................................................................. 730
  Deepak Mane, Tata Research Design and Development Center, India

Chapter 35
Cloud-TM: An Elastic, Self-Tuning Transactional Store for the Cloud ........................................ 749
  João Barreto, Technical University Lisbon, Portugal
  Pierangelo Di Sanzo, Sapienza Università di Roma, Italy
  Roberto Palmieri, Sapienza Università di Roma, Italy
  Paolo Romano, Technical University Lisbon, Portugal

Chapter 36
Main Components of Cloud Computing .......................................................................................... 782
  Yushi Shen, Microsoft Corporation, USA
  Yale Li, Microsoft Corporation, USA
  Ling Wu, EMC2 Corporation, USA
  Shaofeng Liu, Microsoft Corporation, USA
  Qian Wen, Endronic Corp, USA

Chapter 37
Design and Implementation of Optical Cloud Networks: Promises and Challenges .................... 808
  Walid Abdallah, University of Carthage, Tunisia
  Noureddine Boudriga, University of Carthage, Tunisia

Chapter 38
Performance Evaluation of Secure Data Transmission Mechanism (SDTM) for Cloud Outsourced
Data and Transmission Layer Security (TLS) ............................................................................. 839
  Abdullah A. Alhaj, The University of Jordan-Aqaba Branch, Jordan

Chapter 39
Efficient Healthcare Integrity Assurance in the Cloud with Incremental Cryptography and Trusted
Computing ...................................................................................................................................... 845
  Wassim Itani, Beirut Arab University, Lebanon
  Ayman Kayssi, American University of Beirut, Lebanon
  Ali Chehab, American University of Beirut, Lebanon

Chapter 40
The University Library Electronic Identities Authentication System (UL-EIDA): Enhanced by
Segmented Virtual Machines and VLANs for Deployment in the Sub-Saharan Region .................. 858
  Jameson Mbale, University of Namibia, Namibia

Chapter 41
Cloud Database Systems: NoSQL, NewSQL, and Hybrid ............................................................. 874
  Swati V. Chande, International School of Informatics and Management, India
Chapter 42
Sharing Medical Information by Means of Using Intelligent Agents and Cloud Computing ............... 889
Mauricio Paletta, Universidad Nacional Experimental de Guayana, Venezuela

Chapter 43
Elastic Application Container System: Elastic Web Applications Provisioning .............................. 920
Sijin He, Imperial College London, UK
Li Guo, University of Central Lancashire, UK
Yike Guo, Imperial College London, UK

Chapter 44
Communication Infrastructures in Access Networks ........................................................................ 943
Syed Ali Haider, University of North Carolina at Charlotte, USA & National University of Science and Technology, Pakistan
M. Yasin Akhtar Raja, University of North Carolina at Charlotte, USA
Khurram Kazi, New York Institute of Technology, USA

Section 4
Utilization and Application

This section explores some of the vast array of useful applications of Cloud Technology. Cloud and network computing are both pervasive in the digital world, and diverse industries are making use of these technologies to improve their daily operations. Some of the applications described in this section include vehicular networks, e-government, biology and medicine, and education, among others. The 16 chapters in this section provide an in-depth examination of the utilization and application of the fundamental principles of Cloud Technology.

Chapter 45
The Network Infrastructures for Big Data Analytics .......................................................................... 971
Pethuru Raj, IBM India Pvt Ltd, India

Chapter 46
Mobile Video Cloud Networks ........................................................................................................ 1000
Qi Wang, University of the West of Scotland, UK
James Nightingale, University of the West of Scotland, UK
Runpeng Wang, Beijing Foreign Studies University, China
Naeem Ramzan, University of the West of Scotland, UK
Christos Grecos, University of the West of Scotland, UK
Xinheng Wang, University of the West of Scotland, UK
Abbes Amira, University of the West of Scotland, UK
Chunbo Luo, University of the West of Scotland, UK

Chapter 47
Integration of Cognitive Radio Sensor Networks and Cloud Computing: A Recent Trend .......... 1025
Yasir Saleem, Sunway University, Malaysia
Farrukh Salim, NED University of Engineering and Technology, Pakistan
Mubashir Husain Rehmani, COMSATS Institute of Information Technology, Pakistan
Chapter 48
Vehicular Cloud Computing: Trends and Challenges

Kayhan Zrar Ghafoor, Koya University, Iraq
Marwan Aziz Mohammed, Koya University, Iraq
Kamalrulnizam Abu Bakar, Universiti Teknologi Malaysia, Malaysia
Ali Safa Sadiq, Universiti Teknologi Malaysia, Malaysia
Jaime Lloret, Universidad Politecnica de Valencia, Spain

Chapter 49
Computing Traffic Information in the Cloud

Po-Ting Wei, National Tsing Hua University, Taiwan
Tai-Chi Wang, National Tsing Hua University, Taiwan
Shih-Yu Chang, National Tsing Hua University, Taiwan
Yeh-Ching Chung, National Tsing Hua University, Taiwan

Chapter 50
The Use of Cloud Computing in Shipping Logistics

Kamalendu Pal, City University London, UK
Bill Karakostas, City University London, UK

Chapter 51
Cloud Computing and Gov 2.0: Traditionalism or Transformation across the Canadian Public Sector?

Jeffrey Roy, School of Public Administration, Dalhousie University, Canada

Chapter 52
Digital Library and Its Requirements in the Global World

Surbhi Saini, Indira Gandhi National Open University, India

Chapter 53
A University of Greenwich Case Study of Cloud Computing: Education as a Service

Victor Chang, University of Greenwich, UK, University of Southampton, UK & School of Computing and Creative Technologies, UK
Gary Wills, University of Southampton, UK

Chapter 54
Telecommunication Industry: Storage and Mobility

Fredrik Solsvik, Telenor ASA, Norway
Michel Dao, Orange Labs, France

Chapter 55
Leveraging the Cloud for Large-Scale Software Testing: A Case Study - Google Chrome on Amazon

Anjan Pakhira, University of Newcastle upon Tyne, UK
Peter Andras, University of Newcastle upon Tyne, UK
Volume III

Chapter 56
Cloud Computing for Earth Observation

Roberto Cossu, European Space Agency, Italy
Claudio Di Giulio, European Space Agency, Italy
Fabrice Brito, Terradue, Italy
Dana Petcu, Institute e-Austria, Austria & West University of Timisoara, Romania

Chapter 57
Digital Forensic Investigation and Cloud Computing

Joshua I. James, University College Dublin, Ireland
Ahmed F. Shosha, University College Dublin, Ireland
Pavel Gladyshev, University College Dublin, Ireland

Chapter 58
Cloud Computing for BioLabs

Abraham Pouliakis, University of Athens, Greece
Aris Spathis, University of Athens, Greece
Christine Kottaridi, University of Athens, Greece
Antonia Mourtzikou, University of Athens, Greece
Marilena Stamouli, Naval and Veterans Hospital, Greece
Stavros Archondakis, 401 General Army Hospital, Greece
Efrossyni Karakitsou, National Technical University of Athens, Greece
Petros Karakitsos, University of Athens, Greece

Chapter 59
Bioinformatics Clouds for High-Throughput Technologies

Claudia Cava, National Research Council, Italy
Francesca Gallivanone, National Research Council, Italy
Christian Salvatore, National Research Council, Italy
Pasquale Anthony Della Rosa, National Research Council, Italy
Isabella Castiglioni, National Research Council, Italy

Chapter 60
Cloud Computing for Cytopathologists

Abraham Pouliakis, University of Athens, Greece
Stavros Archondakis, 401 Military Hospital, Greece
Efrossyni Karakitsou, National Technical University of Athens, Greece
Petros Karakitsos, University of Athens, Greece
Section 5
Organizational and Social Implications

This section takes a look at how Cloud Technology impacts the lives and livelihoods of those who use it. In addition to data security concerns, professional and private users alike have a vested interest in cloud computing systems and in ensuring the reliability and usefulness of these systems. Critical concerns include risk assessment and regulation, security, and privacy. In these 16 chapters, readers will find an in-depth discussion of some of the most pressing organizational and social implications of Cloud Technology.

Chapter 61
Demystifying Quality of Healthcare in the Cloud ................................................................. 1334
Anastasius Mountzoglo, Hellenic Society for Quality and Safety in Healthcare, Greece & P. & A. Kyriakou Children’s Hospital, Greece

Chapter 62
Using Obstacles for Systematically Modeling, Analysing, and Mitigating Risks in Cloud Adoption ................................................................. 1351
Shehnila Zardari, University of Birmingham, UK
Funmilade Faniyi, University of Birmingham, UK
Rami Bahsoon, University of Birmingham, UK

Chapter 63
Regulatory Aspects of Cloud Computing in Business Environments ......................................... 1373
Michael Losavio, University of Louisville, USA
Pavel Pastukhov, Perm State University, Russia
Svetlana Polyakova, Perm State University, Russia

Chapter 64
Cloud Standards: Security and Interoperability Issues .............................................................. 1387
Fabio Bracci, University of Bologna, Italy
Antonio Corradi, University of Bologna, Italy
Luca Foschini, University of Bologna, Italy

Chapter 65
Impact of Cultural Differences on the Cloud Computing Ecosystems in the USA and China........ 1417
Yushi Shen, Microsoft Corporation, USA
Jie Yang, Microsoft Corporation, USA
Tayfun Keskin, University of Washington, USA

Chapter 66
Different Perspectives of Cloud Security .................................................................................... 1432
M. Sundaresan, Bharathiar University, India
D. Boopathy, Bharathiar University, India
Chapter 67
Security in Cloud Computing ................................................................. 1450
  Alpana M. Desai, University of Alaska Anchorage, USA
  Kenrick Mock, University of Alaska Anchorage, USA

Chapter 68
Secure Network Solutions for Enterprise Cloud Services ...................... 1464
  Chengcheng Huang, University of Ballarat, Australia
  Phil Smith, University of Ballarat, Australia
  Zhaohao Sun, University of Ballarat, Australia

Chapter 69
Compliance in the Cloud ..................................................................... 1487
  Lucia Bonelli, Engineering Ingegneria Informatica, Italy
  Luisa Giudicianni, Engineering Ingegneria Informatica, Italy
  Angelo Immediata, Engineering Ingegneria Informatica, Italy
  Antonio Luzzi, Engineering Ingegneria Informatica, Italy

Chapter 70
Hack the Cloud: Ethical Hacking and Cloud Forensics .......................... 1510
  Mark Crosbie, IBM, Ireland

Chapter 71
  Miodrag J. Mihaljević, Mathematical Institute, Serbian Academy of Sciences and Arts,
  Serbia & Chuo University, Japan
  Hideki Imai, Chuo University, Japan

Chapter 72
Security in Mobile Cloud Computing .................................................. 1548
  Hero Modares, University of Malaya, Malaysia
  Jaime Lloret, Universidad Politecnica de Valencia, Spain
  Amirhossein Moravejsharieh, University of Canterbury, New Zealand
  Rosli Salleh, University of Malaya, Malaysia

Chapter 73
Mobile Cloud Computing and Its Security and Privacy Challenges ........... 1561
  Hassan Takabi, University of Pittsburgh, USA
  Saman Taghavi Zargar, University of Pittsburgh, USA
  James B. D. Joshi, University of Pittsburgh, USA

Chapter 74
Security and Privacy Issues in Cloud Computing ................................... 1585
  Jaydip Sen, Tata Consultancy Services Ltd., India
Chapter 75
Addressing Privacy in Traditional and Cloud-Based Systems ............................................ 1631
Christos Kalloniatis, University of the Aegean, Greece
Evangelia Kavakli, University of the Aegean, Greece
Stefanos Gritzalis, University of the Aegean, Greece

Chapter 76
Digital Identity Management in Cloud ................................................................................ 1660
Vladimir Vujin, University of Belgrade, Serbia
Konstantin Simić, University of Belgrade, Serbia
Borko Kovačević, Microsoft, Serbia

Section 6
Managerial Impact

This section delves more deeply into both the management and utilization of Cloud Technology, as well as the use of Cloud Technology in managing others. In business, the cloud can be a useful tool, but only when properly managed and implemented by professionals who know the best use for these technologies. Topics explored in this section include cloud computing for business environments, risk management techniques, and research-based practices. This section’s 11 chapters examine the managerial impact of key topics in the field of Cloud Technology.

Chapter 77
Virtualization and Cloud Computing: Business Models in the Virtual Cloud ..................... 1687
Chaka Chaka, Tshwane University of Technology, South Africa

Chapter 78
Cloud Computing Security and Risk Management ............................................................. 1702
Yoshito Kanamori, University of Alaska Anchorage, USA
Minnie Yi-Miin Yen, University of Alaska Anchorage, USA

Chapter 79
Risk Management in the Cloud and Cloud Outages........................................................... 1721
S. Srinivasan, Texas Southern University, USA

Chapter 80
Cloud Computing and Enterprise Migration Strategies....................................................... 1732
Rosiah Ho, Lignan University, Hong Kong

Chapter 81
Marc Rabaey, University of Hasselt, Belgium

Chapter 82
Cloud Computing Decisions in Real Enterprises ............................................................... 1780
Manuel Pérez-Cota, Universidade de Vigo, Spain
Ramiro Gonçalves, Universidade de Trás-os-Montes e Alto Douro, Portugal
Fernando Moreira, Universidade Portucalense Infante D. Henrique, Portugal
Section 7
Critical Issues

This section considers Cloud Technology from an analytic perspective, challenging accepted notions and looking toward future best practices. While implementation of cloud computing paradigms is an important part of the modern information society, there are security issues which must be carefully considered before fully investing in new technologies. In particular, this section considers the performance of cloud systems, security and legal implications, and their use in both healthcare and education, among other fields. In this section, 15 chapters explore some of the critical issues driving advances in Cloud Technology.

Chapter 88
Performance Evaluation of Data Intensive Computing In the Cloud .......................................... 1901
Sanjay P. Ahuja, School of Computing, University of North Florida, USA
Bhagavathi Kaza, School of Computing, University of North Florida, USA

Chapter 89
Towards Improving the Testability of Cloud Application Services .................................................. 1915
Tariq M. King, North Dakota State University, USA
Annaji S. Ganti, North Dakota State University, USA & Microsoft Corporation, USA
David Froslie, Microsoft Corporation, USA

Chapter 90
Accelerating Mobile-Cloud Computing: A Survey ................................................................. 1933
Tolga Soyata, University of Rochester, USA
He Ba, University of Rochester, USA
Wendi Heinzelman, University of Rochester, USA
Minseok Kwon, Rochester Institute of Technology, USA
Jiye Shi, UCB Pharma, UK

Chapter 91
Cloud Scalability Measurement and Testing ............................................................................ 1956
Xiaoying Bai, Tsinghua University, China
Jerry Gao, San Jose State University, USA
Wei-Tek Tsai, Tsinghua University, China & Arizona State University, USA

Chapter 92
Carrier-Grade Distributed Cloud Computing: Demands, Challenges, Designs, and Future
Perspectives ....................................................................................................................................... 1981
Dapeng Wang, Alcatel-Lucent, China
Jinsong Wu, Alcatel-Lucent, China

Chapter 93
Solving Security and Availability Challenges in Public Clouds .............................................. 1999
Maxim Schnjakin, Potsdam University, Germany
Christoph Meinel, Potsdam University, Germany

Chapter 94
Securing Business IT on the Cloud ...................................................................................... 2022
Bina Ramamurthy, University at Buffalo, USA

Chapter 95
Seizing Electronic Evidence from Cloud Computing Environments ................................... 2033
Josiah Dykstra, University of Maryland, Baltimore County, USA

Chapter 96
Key Legal Issues with Cloud Computing: A UK Law Perspective ....................................... 2063
Sam De Silva, Manches LLP, UK

Chapter 97
Compliance in the Cloud and the Implications on Electronic Discovery .............................. 2078
Dean Gonsowski, Symantec Corporation, USA
Chapter 98
The Legal Implications of Cloud Computing ................................................................. 2099
  Michael L. Kemp, University of Richmond, USA
  Shannon Robb, University of Richmond, USA
  P. Candace Deans, University of Richmond, USA

Chapter 99
A Case Study of the Health Cloud.................................................................................. 2115
  Roma Chauhan, IILM Graduate School of Management, India

Chapter 100
Do Open Educational Resources and Cloud Classroom Really Improve Students’ Learning? .... 2126
  Chia-Wen Tsai, Ming Chuan University, Taiwan
  Pei-Di Shen, Ming Chuan University, Taiwan

Chapter 101
The Economics of Cloud Computing .............................................................................. 2135
  Federico Etro, University of Venice, Ca’ Foscari, Italy

Chapter 102
Is the Cloud the Future of Computing? ........................................................................... 2149
  Joseph M. Kizza, University of Tennessee – Chattanooga, USA
  Li Yang, University of Tennessee – Chattanooga, USA

Section 8
Emerging Trends

This section examines recent developments and improvements in Cloud Technology to predict where the field might head next. As more businesses and individuals migrate their information to the cloud, new technologies must be developed to meet increases in demand. Such system improvements include cryptographic encryption techniques, resource allocation algorithms, and database management tools, among others. The final 11 chapters of this extensive four-volume reference conclude with a detailed look at emerging trends in the field of Cloud Technology.

Chapter 103
Rationale for Use of Cloud Computing: A QoS-Based Framework for Service Provider Selection 2166
  Amir Zeid, American University of Kuwait, Kuwait
  Ahmed Shawish, Ain Shams University, Egypt
  Maria Salama, British University in Egypt, Egypt

Chapter 104
The Cloud Inside the Network: A Virtualization Approach to Resource Allocation .................. 2198
  João Soares, University of Aveiro, Portugal & Portugal Telecom Inovação, Portugal
  Romeu Monteiro, University of Aveiro, Portugal
  Márcio Melo, University of Aveiro, Portugal & Portugal Telecom Inovação, Portugal
  Susana Sargento, University of Aveiro, Portugal & Instituto de Telecomunicações, Portugal
  Jorge Carapinha, Portugal Telecom Inovação, Portugal
Chapter 105
Novel Resource Allocation Algorithm for Energy-Efficient Cloud Computing in Heterogeneous Environment

Wei-Wei Lin, South China University of Technology, China
Liang Tan, Zhejiang University, China
James Z. Wang, Clemson University, USA

Chapter 106
Streamlining Cloud Management Automation by Unifying the Invocation of Scripts and Services Based on TOSCA

Johannes Wettinger, Institute of Architecture of Application Systems, University of Stuttgart, Germany
Tobias Binz, Institute of Architecture of Application Systems, University of Stuttgart, Germany
Uwe Breitenbücher, Institute of Architecture of Application Systems, University of Stuttgart, Germany
Oliver Kopp, Institute of Architecture of Application Systems, University of Stuttgart, Germany
Frank Leymann, Institute of Architecture of Application Systems, University of Stuttgart, Germany

Chapter 107
Dynamic Dedicated Server Allocation for Service Oriented Multi-Agent Data Intensive Architecture in Biomedical and Geospatial Cloud

Sudhansu Shekhar Patra, KIIT University, India
R. K. Barik, KIIT University, India

Chapter 108
High-Throughput Encryption for Cloud Computing Storage System

Yaser Jararweh, Jordan University of Science and Technology, Jordan
Ola Al-Sharqawi, Jordan University of Science and Technology, Jordan
Nawaf Abdulla, Jordan University of Science and Technology, Jordan
Lo’ai Tawalbeh, Jordan University of Science and Technology, Jordan
Mohammad Alhammouri, Jordan University of Science and Technology, Jordan

Chapter 109
A Forensic-as-a-Service Delivery Platform for Law Enforcement Agencies

Fabio Marturana, University of Rome “Tor Vergata”, Italy
Simone Tacconi, Postal and Communications Police, Italy
Giuseppe F. Italiano, University of Rome “Tor Vergata”, Italy

Chapter 110

Toshihiro Hanawa, University of Tsukuba, Japan
Mitsuhisa Sato, University of Tsukuba, Japan
Chapter 111
Mobile and Cloud Technologies for Smarter Governance.......................................................... 2323
Pethuru Raj, IBM India, India

Chapter 112
Forecasting the Trends in Cloud Computing and its Impact on Future IT Business .................. 2354
Ebin Deni Raj, VIT University, India
L. D. Dhinesh Babu, VIT University, India
Ezendu Ariwa, University of Bedfordshire, UK
M. Nirmala, VIT University, India
P. Venkata Krishna, VIT University, India

Chapter 113
Cloud Bioinformatics in a Private Cloud Deployment................................................................... 2373
Victor Chang, Leeds Metropolitan University, UK & University of Southampton, UK

Index............................................................................................................................................. xxxi