THEME ARTICLES

22 Guest Editors’ Introduction: Middleware for Multicloud
Luiz F. Bittencourt, Rodrigo N. Calheiros, and Craig Lee

26 A Middleware for Mobile Edge Computing
A. Carrega, M. Repetto, P. Gouvas and A. Zafeiropoulos

38 Authorization Policy Federation in Heterogeneous Multicloud Environments
Ioram S. Sette, David W. Chadwick, and Carlos A. G. Ferraz

48 Cost-Aware Cloud Profiling, Prediction, and Provisioning as a Service
Ryan Chard, Kyle Chard, Rich Wolski, Ravi Madduri, Bryan Ng, Kris Bubendorfer, and Ian Foster

60 NoMISHAP: A Novel Middleware Support for High Availability in Multicloud PaaS
Luca Acquaviva, Paolo Bellavista, Filippo Bosi, Antonio Corradi, Luca Foschini, Stefano Monti, and Andrea Sabbioni

74 On the Design of Resilient Multicloud MapReduce
Pedro A. R. S. Costa, Fernando M. V. Ramos, and Miguel Correia
COLUMNS

4 From the Editor in Chief
Multiclouds in an Enterprise – a Love-Hate Relationship
Mazin Yousif

6 Cloud Economics
Real-World Experience with a Multicloud Exchange
Adam Zeck and Jack Bouroudjian

12 Cloud and the Law
Biometrics in the Cloud: Challenges and Research Opportunities
Aniello Castiglione, Kim-Kwang Raymond Choo, Michele Nappi, and Fabio Narducci

18 Cloud Tidbits
Are Cloud Service Brokers (CSBs) Still Relevant?
David S. Linthicum

84 Standards Now
Blockchain Standards for Compliance and Trust
Ashiq Anjum, Manu Sporny, and Alan Sill

92 Blue Skies
Software Defined Membrane: Policy-Driven Edge and Internet of Things Security
Massimo Villari, Maria Fazio, Schahram Dustdar, Omer Rana, Lydia Chen, and Rajiv Ranjan

25 IEEE CS Information