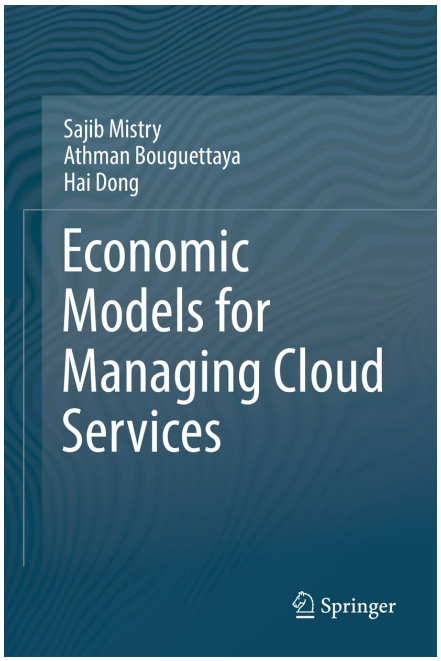

Springer

1st edition

1st ed. 2018, XIX, 141 p. 53 illus., 12 illus. in color.

Printed book
Hardcover

Printed book
Hardcover
ISBN 978-3-319-73875-8
£ 74,99 | CHF 100,50 | 84,99 € | 93,49 € (A) | 90,94 € (D)
Available

Discount group
Science (SC)

Product category
Monograph

Other renditions
Softcover
ISBN 978-3-319-89260-3
Softcover
ISBN 978-3-319-73877-2

Computer Science : Information Systems Applications (incl.Internet)

Mistry, S., Bouguettaya, A., Dong, H.

Economic Models for Managing Cloud Services

- One of the first books that develops a long-term cloud service composition framework from a provider's perspective
- The proposed framework provides significant momentum to the business of IaaS providers, especially small providers
- Explores innovative methodologies for wider adoption of the cloud services at a greater scale and faster pace
- Discusses the state-of-art technologies and composition framework to enable an economically viable cloud market

The authors introduce both the quantitative and qualitative economic models as optimization tools for the selection of long-term cloud service requests. The economic models fit almost intuitively in the way business is usually done and maximize the profit of a cloud provider for a long-term period. The authors propose a new multivariate Hidden Markov and Autoregressive Integrated Moving Average (HMM-ARIMA) model to predict various patterns of runtime resource utilization. A heuristic-based Integer Linear Programming (ILP) optimization approach is developed to maximize the runtime resource utilization. It deploys a Dynamic Bayesian Network (DBN) to model the dynamic pricing and long-term operating cost. A new Hybrid Adaptive Genetic Algorithm (HAGA) is proposed that optimizes a non-linear profit function periodically to address the stochastic arrival of requests. Next, the authors explore the Temporal Conditional Preference Network (TempCP-Net) as the qualitative economic model to represent the high-level IaaS business strategies. The temporal qualitative preferences are indexed in a multidimensional k-d tree to efficiently compute the preference ranking at runtime. A three-dimensional Q-learning approach is developed to find an optimal qualitative composition using statistical analysis on historical request patterns. Finally, the authors propose a new multivariate approach to predict future Quality of Service (QoS) performances of peer service providers to efficiently configure a TempCP-Net. It discusses the experimental results and evaluates the efficiency of the proposed composition framework using Google Cluster data, real-world QoS data, and synthetic data.

Order online at springer.com/booksellers
Springer Nature Customer Service Center GmbH
Customer Service
Tiergartenstrasse 15-17
69121 Heidelberg
Germany
T: +49 (0)6221 345-4301
row-booksellers@springernature.com

Prices and other details are subject to change without notice. All errors and omissions excepted. Americas: Tax will be added where applicable. Canadian residents please add PST, QST or GST. Please add $5.00 for shipping one book and $ 1.00 for each additional book. Outside the US and Canada add $ 10.00 for first book, $5.00 for each additional book. If an order cannot be fulfilled within 90 days, payment will be refunded upon request. Prices are payable in US currency or its equivalent.

ISBN 978-3-319-73875-8 / BIC: UNH / SPRINGER NATURE: SCI18040