



















algorithm to reduce SLA violation, and designing and implementation of greedy algorithms for other data center resources such as memory, disk and network interface.

#### REFERENCES

- [1] D. Rogers and U. Homann, "Application patterns for green IT," *Archit. J.*, vol. 18, pp. 16–21, 2008.
- [2] G. Rangaraj and R. Bahsoon, "Green Software Architectures: A Market-Based Approach," in *The Second International Workshop on Software Research and Climate Change (WSRCC)*, in affiliation with the ACM/IEEE 32nd International Conference on Software Engineering (ICSE), Cape Town, South Africa, 2010.
- [3] A. Spellmann, R. Gimarc, M. Preston, and O. I. Hyperformix, "Leveraging the cloud for green IT: predicting the energy, cost and performance of cloud computing," in *Computer Measurement Group Conference (CMG'09)*, Dallas, Texas, 2009.
- [4] H. Katzan Jr, "Cloud software service: concepts, technology, economics," *Serv. Sci.*, vol. 1, no. 4, pp. 256–269, 2009.
- [5] A. Berl, E. Gelenbe, M. Di Girolamo, G. Giuliani, H. De Meer, M. Q. Dang, and K. Pentikousis, "Energy-efficient cloud computing," *Comput. J.*, vol. 53, no. 7, pp. 1045–1051, 2010.
- [6] F.-S. Chu, K.-C. Chen, and C.-M. Cheng, "Toward green cloud computing," in *Proceedings of the 5th International Conference on Ubiquitous Information Management and Communication*, 2011, p. 31.
- [7] R. Bahsoon, "A framework for dynamic self-optimization of power and dependability requirements in Green Cloud architectures," in *Software Architecture*, Springer, 2010, pp. 510–514.
- [8] A. Beloglazov and R. Buyya, "Optimal online deterministic algorithms and adaptive heuristics for energy aware performance efficient dynamic consolidation of virtual machines in cloud data centers," *Concurr. Comput. Pract. Exp.*, vol. 24, no. 13, pp. 1390–1420, 2012.
- [9] R. N. Calheiros, R. Ranjan, A. Beloglazov, C. A. F. De Rose, and R. Buyya, "CloudSim: a toolkit for modeling and simulation of cloud computing environments and evaluation of resource provisioning algorithms," *Softw. Pract. Exp.*, vol. 41, no. 1, pp. 23–50, 2011.
- [10] A. Beloglazov, J. Abawajy, and R. Buyya, "Energy-aware resource allocation heuristics for efficient management of data centers for cloud computing," *Futur. Gener. Comput. Syst.*, vol. 28, no. 5, pp. 755–768, 2012.
- [11] V. Sivaraman, A. Vishwanath, Z. Zhao, and C. Russell, "Profiling per-packet and per-byte energy consumption in the NetFPGA Gigabit router," in *Computer Communications Workshops (INFOCOM WKSHPs)*, 2011 IEEE Conference on, 2011, pp. 331–336.
- [12] S. K. Garg, C. S. Yeo, and R. Buyya, "Green cloud framework for improving carbon efficiency of clouds," in *Euro-Par 2011 Parallel Processing*, Springer, 2011, pp. 491–502.
- [13] M. A. Salehi, P. Radha Krishna, K. S. Deepak, and R. Buyya, "Preemption-Aware Energy Management in Virtualized Data Centers," in *Cloud Computing (CLOUD)*, 2012 IEEE 5th International Conference on, 2012, pp. 844–851.
- [14] S. K. Garg, S. K. Gopalaiyengar, and R. Buyya, "SLA-based resource provisioning for heterogeneous workloads in a virtualized cloud datacenter," in *Algorithms and Architectures for Parallel Processing*, Springer, 2011, pp. 371–384.
- [15] M. Choudhary and S. K. Peddoju, "A dynamic optimization algorithm for task scheduling in cloud environment," *Int. J. Eng. Res. Appl.*, vol. 2, no. 3, pp. 2564–2568, 2012.
- [16] N. S. Ram Kumar Sharma, "A Dynamic Optimization Algorithm for Task Scheduling in Cloud Computing With Resource Utilization," *Int. J. Sci. Eng. Technol.*, vol. 2, no. 10, pp. 1062–1068, Oct. 2013.
- [17] A. Beloglazov and R. Buyya, "A taxonomy and survey of energy-efficient data centers and cloud computing systems," *Adv. Comput.*, vol. 82, no. 2, pp. 47–111, 2011.