

Monnapat Limrattanasilp 2014: Virtual Machine Allocation using Server Power Profile. Master of Science (Computer Science), Major Field: Computer Science, Department of Computer Science. Thesis Advisor: Mr. Sethavidh Gertphol, Ph.D. 78 pages.

Cloud computing has potentials to reduce energy consumption in the data center of Cloud providers by consolidating virtual machines into as few servers as possible. The important question then becomes which physical machines should be used first, because machines from different company or different generation may not be equally efficient in energy consumption. The energy efficiency of a server is characterized by its SPEC Power benchmark. This research proposes two Greedy algorithms, ESO and FL-n, to determine the order of physical machines to be used in a Cloud environment such that the overall energy consumption is minimized. The experimental results show that ESO performed well when servers were from the same generation, using energy not more than 10% over the optimal ordering. FL-n provided good results even when servers were from different generation also, using energy not more than 5% over the optimal in all scenarios.

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Thesis Advisor's signature