Free cloud computing: annotated bibliography term paper example

Technology, Innovation

Anton B., Jemal A., Rajkumar B., Energy-aware resource allocation heuristics for efficient management of data centers for Cloud computing, Future Generation Computer Systems Volume 28, Issue 5, May 2012, pp 755–768.

The paper defines an architectural framework and principles that would enable energy-efficient implementation of cloud computing services. It examines resource allocation and provisioning algorithms that could be used in an energy-efficient cloud computing environment. It uses the CloudSim toolkit to validate the approach used to perform the evaluation study for the algorithms. It is a relevant paper for research in power saving when running data centers.

Arman S., Eric E., Hillary P., Arpad H., William W. N., Data center design and location: Consequences for electricity use and greenhouse-gas emissions, Building and Environment. Volume 46, Issue 5, May 2011, pp 990–998.

The paper looks at the increased need for electricity use in data centers, as more servers are installed to offer cloud and other services to various users, and the impact it has to the environment. It then looks at energy modeling efforts for data centers and compares the efficiency of various equipment used in data centers. It is relevant for data center installers and researchers on data centers where cloud services are hosted.

Benjamin H., Andy K., Matei Z., Ali G., Anthony D. J., Randy K., Scott S., Ion S., Mesos: A Platform for Fine-Grained Resource Sharing in the Data Center, In proceedings of the 8th USENIX conference on Networked systems design and implementation, pp 295-308.

The paper examines Mesos, a cloud computing platform that is capable of sharing clusters among varied cluster computing frameworks. It explains

how the platform facilitates sharing of resources and supports sophisticated schedulers as well as how it optimizes data locality in diverse frameworks. It is resourceful for understanding provision of cloud computing services.

Hamilton, Cooperative Expendable Micro-slice Servers (CEMS): Low cost, low power servers for Internet-scale services, In proceedings of 4th Biennial Conference on Innovative Data Systems Research (CIDR), January 2009

The paper examines the CEMS project where low cost servers that use low power are able to host high-scale internet services with client-side and commodity components. It compares the efficiency of the servers with purpose-built servers elsewhere and gives insight on how such servers are suitable for highly-intensive service provision such as in cloud computing. The paper is suitable for engineers and researchers on cost effective provision of cloud computing services.

Jayant B., Robert W. A. Ayre, Kerry H., Rodney S. T., Green Cloud Computing: Balancing Energy in Processing, Storage, and Transport, Volume: 99, Issue: 1, Jan. 2011, pp 149 - 167.

The paper presents an analysis of energy consumption in cloud computing. It considers both public and private clouds and the energy consumption in switching and transmission as well as data processing and storage. It shows that cloud computing consumes a significant amount of energy in transport and switching and shows how cloud computing can enable energy-efficient use of computing power. The paper has invaluable information in power optimization in cloud computing.

Junaid S., Kashif B., Sajjad A. M., Mazliza O., Rajiv R., Pavan B., Samee U. K., Survey of Techniques and Architectures for Designing Energy-Efficient Data

Centers, Systems Journal, IEEE, Issue 99, pp 1 – 13.

The research paper looks at issues that cause conflicting requirements in data centers in the tradeoff between maximizing the quality of cloud computing services and minimizing energy consumption. It looks at hardware and software based techniques that data center controllers can manipulate to attain energy efficiency in data centers. It is a suitable research paper for ensuring maximum utility in terms of service and power in offering cloud computing services.

Lakshmi G., Hakim W., Tudor M., Ken B., Integrated Approach to Data Center Power Management, Computers, IEEE Transactions in Volume 62, Issue 6, pp 1086 – 1096.

The paper proposes an integrated system of power management in data centers that combines the power-proportional approach that minimizes server and disc power consumption with the green data center approach that minimizes power consumed by support infrastructure at the data center. It explains how the system sustains high performance in offering cloud computing and other computing services. It is a resourceful paper for power conservation in data centers.

Luiz A. B., Urs H., The Datacenter as a Computer: An introduction to the Design of Warehouse-Scale Machines, Morgan & Claypool Publishers series, 2009.

The paper looks at cloud computing technologies as having necessitated computing platforms to grow to warehouse scale for data centers. It then looks at a holistic approach to building such centers and deploying cloud computing services. It examines architectures and other factors that

influence the eventual building and offering of the cloud services. It is an important resource for understanding how cloud computing services are put together.

L. Keys, S. Rivoire, and J. Davis, The search for energy-efficient building blocks for the data center, Published in the book Computer Architecture, Lecture Notes in Computer Science, Volume 6161, 2012, pp 172-182.

The notes highlight the need for a holistic approach when designing both hardware and software resources for data centers. They describe the architecture of datacenters as massive warehouse-scale computers then looks at the main factors that influence their design, cost structure, operations and characteristics of their software base. It is suitable for both design architects and programmers at the datacenters.

Mendel R., John K. O., The Design and Implementation of a Log-Structured File System. ACM Transactions on Computer Systems (ToCS). Journal of ACM Transactions on Computer Systems (TOCS), Volume 10, Issue 1, Feb. 1992, pp 26-52.

The paper looks at log-structured file system, a mode of disk storage management that enables concurrent writing to disc and disc crash recovery. It explains the structure of the log-structured file system and how it can be implemented in various application areas. It lays a relevant foundation into research and understanding of large storage systems used in data centers that also host cloud computing services.

Peter M., Timothy G., The NIST Definition of Cloud Computing (Draft). National Institute of Standards and Technology Special Publication 800-145, January 2011.

The publication views cloud computing as an evolving paradigm. It gives a definition of cloud computing including important aspects that characterize it. It lays down a perspective for comparisons for deployment strategies and cloud services hence providing a critical threshold for discussions on what cloud computing really is and the best way to use it in varied application areas. The paper is very resourceful for beginning research on cloud computing.

T. Swathi, K. Srikanth, S. Raghunath Reddy, Virtualization in cloud computing. Journal of Computer Science and Information Technology, Vol. 3, Issue. 5, May 2014, pp 540 – 546.

The article looks at virtualization as a fundamental technology behind the working of cloud computing. It explains how multiple programs, both system and application, run on the same server that host cloud services. It also looks at how engineers that design systems for cloud services can optimize the infrastructure at their disposal. The article is suitable both for researchers and implementers on how virtualization is achieved in cloud computing.

R. A. Bergamaschi, L. Piga, S. Rigo, R. Azevedo, G. Araújo, Data center power and performance optimization through global selection of p-states and utilization rates, Sustainable Computing. Informatics and Systems, Volume 2, Issue 4, December 2012, pp 198–208.

The paper presents a framework for simulating and modeling the performance behavior and power usage of data centers as well as the optimization of algorithms for performance and power tradeoffs while considering all the cores that run in the data center simultaneously. It outlines processor power states and utilization rates and gives examples of

web servers that have achieved high level power optimization. It is very resourceful for use in power optimization by data center servers.

R. V. Aroca, L. M. G. Gonçalves, Towards green data centers: A comparison of x86 and arm architectures power efficiency. Journal of Parallel and Distributed Computing, Volume 72, Issue 12, December 2012, pp 1770–1780.

The paper looks at IT infrastructure and computing systems with cluster and server components as necessary building blocks. It then compares the server architectures based on the ARM and the x86 architectures, and the feasibility of building them with the low power computer model. It gives insight into the provision of cloud computing services based on low power servers.

Sudhanva G., Anand S., Mahmut K., Hubertus F., DRPM: Dynamic Speed Control for Power Management in Server Class Disks, Computer Architecture, Proceedings, 30th Annual International Symposium, June 2003, pp 169 - 179.

The paper presents the DRPM approach that dynamically modulates disc rotation speeds as an optimum way of managing disc power consumption. The paper examines various simulations that support the DRPM approach by showing how it offers energy saving opportunities without compromising of performance. It is a suitable paper for implementation of DPRM on server discs.