Abstract

Cloud Computing is one of the fast spreading technologies for providing utility-based IT services to its user. Large-scale virtualized data-centers are established to meet this requirement. Data centers consumes large amount of computation power for providing efficient and reliable services to its user. Such large consumption of electrical energy has increased operating cost for the service providers as well as for the service users. Moreover, a large amount of carbon dioxide is emitted, results into increased global warming in near future. From our studies we concluded that, power consumption can be reduced by live migration of the virtual machines (VM) as required and by switching off idle machines. So, we proposed a dynamic threshold
based approach for CPU utilization for host at data center. This consolidation will work on
dynamic and unpredictable workload avoiding unnecessary power consumption. We will not
only meet energy efficiency requirement but would also ensure quality of service to the user by
minimizing the Service Level Agreement violation. We would also validate the proposed
technique results with higher efficiency.

References

- R. Buyya, CS Yeo, S. Venugopal, J. Broberg, I. Brandic, “Cloud Computing and Emerging
  IT Platforms: Vision, Hype, and Reality for Delivering Computing as the 5th Utility, Future
  Generation Computer Systems, 2011
- R. Buyya et al. Market-oriented cloud computing: Vision, hype, and reality for delivering it
- R. Brown, “Report to congress on server and data center energy efficiency: Public law
  109-431”, Lawrence Berkeley National Laboratory, 2008
- Peer1 hosting site puts a survey on “Visualized: ring around the world of data center
  power usage”. From engadget.com, 2011
- L. A. Barroso and U. Holzle, “The case for energy-proportional computing,” Computer,
  2007
- X. Fan, “Power provisioning for a warehouse-sized computer” In Proc. of the 34th Annual
- C Clark, K Fraser, S Hand, J G Hansen, E July, C Limpach, I Pratt, A Wareld, “Live
  Migration of Virtual Machines” NSDI'05 Proceedings of the 2nd conference on Symposium on
  Networked Systems Design & Implementation, 2005
- E Arzuaga, D R Kaeli, “Quantifying load imbalance on virtualized enterprise servers.” In
  WOSP/SIPEW ’10: Proceedings of the first joint WOSP/SIPEW international conference on
  utilization of dynamic vm migration.” In ICS ’08: Proceedings of the 22nd annual international
  conference on Supercomputing, ACM, 2008.
- Y. Song, “Multi-Tiered On-Demand resource scheduling for VM-Based data center” In
- B Heller, S Seetharaman, P Mahadevan, Y Yiakoumis, P Sharma, S Banerjee, N
  McKeown,” ElasticTree: Saving Energy in Data Center Networks”NSDI 2010
- D. Gmach, “Resource pool management: Reactive versus proactive or let Ss be
  friends”. Computer Networks, 2009
- A. Beloglazov, R. Buyya, “Energy efficient allocation of virtual machines in cloud data
- G Laszewski, L Wangz, A J. Youngez, X Hez, “Power-Aware Scheduling of Virtual
  Machines in DVFS-enabled Clusters, IEEE, 2009
  Data Centers” 10th IEEE/ACM International Conference on Cluster, Cloud and Grid Computing,
  2010
- Jason Sonnek and Abhishek Chandra Virtual Putty: “Reshaping the Physical Footprint of Virtual Machines” HotCloud ,2009

**Index Terms**

Computer Science  Communication and Networks

**Keywords**

Energy Efficient  Green IT  Cloud computing  Live Migration  CPU Utilization  VM Selection

VM Placement