

عنوان مقاله:

Energy Aware Resource Management of Cloud Data Centers

محل انتشار:

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خلاصه مقاله:

Cloud Computing, the long-held dream of computing as a utility, has the potential to transform a large part of the IT industry, making software even more attractive as a service and shaping the way IT hardware is designed and purchased. Virtualization technology forms a key concept for new cloud computing architectures. The data centers are used to provide cloud services burdening a significant cost due to high energy consumption. Data centers are provisioned to accommodate peak demand rather than average demand and cloud applications consume much more electrical energy than they need. Thus, it necessitates that cloud computing solutions not only minimize operational costs, but also reduce the power consumption. In this paper, we investigate load balancing and power saving methods in virtualized cloud infrastructures. Imbalanced distribution of workloads across resources can lead to performance degradation and much electrical power consumption in such data centers. We present an architectural framework and principles for energy-efficient cloud computing environments. Resource provisioning and allocation algorithms, named Load-Power-aware, are proposed in this architecture. The algorithm employs a heuristic to dynamically improve the energy efficiency in data center, while guarantees the Quality of Service (QoS). The efficiency of the proposed approach is evaluated by using the most common cloud computing simulation toolkit, CloudSim. The performance modeling and simulation results are depicted the proposed approach significantly improves the energy efficiency in a given dynamic scenario, while a small amount of service level agreements (SLA) is missed.

کلمات کلیدی:

,Cloud Computing,,Load Balancing,Power Saving,Virtualization,Live Migration

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