Energy and Cost effective Resource Utilization in cloud Environment

ABSTRACT

Cloud computing is a rapidly emerging new paradigm for delivering computing as a service. There are many research issues in cloud computing. Resource allocation is one of the challenging tasks in cloud environment. The main aim of resource allocation to reduce the infrastructure cost associated with companies. The resources offered in the cloud are probably heterogeneous and extremely dynamic. Due to this dynamic access, load balancing of jobs required. For achieving this many schemes are proposed. Skewness is one of the techniques to allocate the data center resources to physical systems through Virtual machine monitor (VMM). This algorithm concentrates only on bottleneck resources. This can be taken decisions based on the static information on resources. So this research work proposed Virtual Machine (VM) shift algorithm to allocate the data center resources dynamically. This algorithm is to allot data centre resources dynamically based on the application demands. VM shift algorithm is to measure the unevenness in the multidimensional resource utilization of a server. If any load imbalance identified, it will perform the load balance according to the availability of the physical machines. This algorithm is to shift the VM from one server to other server when the overload is detected. This algorithm, combines different workloads and provides improved overall utilization of server.

In cloud computing resource allocation should be elastic and intelligent based on application demand and user requirements. In data center, Virtual machine allocates the resources to user based on need. Some time workload of servers, increase rapidly, the existing System used aggressive resource provisioning tasks using SPRNT, but still some challenges occur in VM allocation. Such as, it may fail when faced with rapidly increasing workload and user can't commit with virtual machine that which one is adapted to the task, hence it results in increase adaptation time and memory access time. This work proposed genetic algorithm to allocate the data center resources. This can be implemented through calculation of fitness values of cloudlets. The best cloudlets are selected based on total fitness value. This can be reducing the memory access time and adaptation time.

Cloud computing exploits network of remote servers organized on the internet. This is used to store, manage, and process information, rather than a regional web server or a laptop or computer. The cloud computing services are available through the datacenters. The resources are most important consideration for energy consumption in data centers. Moreover power consumption within the cloud is proportional to the resource usage of datacenter. So this research work proposed to minimize the energy consumption through the clusters of server and VM migration methods using hybrid genetic algorithm. This algorithm is combination of genetic algorithm, K-means clustering algorithm and VM migration algorithm. This can be improving the energy efficient resource allocation by reducing the clock frequency. The energy consumption is reduced by decreasing the VM migration.

Cloud computing is the latest distributed computing paradigm that offers tremendous opportunities to solve large-scale scientific problems. Various challenges are need to be addressed in order to efficiently utilize the workflow applications. Some existing works fail to meet either the user's quality of service (QOS) or to meet the basic cloud requirements such as elasticity and heterogeneity of computing resources. Particle Swarm Optimization (PSO) Algorithm was implemented to minimize the execution cost with the Fitness Value. But increasing workload during resource allocation some process is idle which needs long execution time thereby increasing the Cost. To overcome the drawbacks of existing system a new algorithm named "Trust Scheduling Algorithm" is implemented to increase the efficient use of resources to reduce the Execution time. This can be achieved through calculation of velocity and position of jobs.