Abstract

The rising trend of e-commerce and cloud computing are just two reasons for the growing demand for Data Centers (DCs). DCs are among the largest global energy consumers in relation to the total global energy consumption. The rising numbers of DCs are an increasingly negative impact on the environment. This may be caused by the DCs themselves as well as by the power generation that is needed by the DCs. Thus, the utilization of servers in most data centers can be improved by adding virtualization and selecting the most suitable host for each Virtual Machine (VM). The problem of VM placement is an optimization problem to achieve multiple goals. To overcome those problems we design the allocator in order to accept as many VM requests as possible, taking into account the power consumption of the network devices. It can be covered through various approaches such as allocator policy (Best Fit/Worst Fit), allocation strategy (Single/Multi-objective optimization), and network resources. Each approach aims to simultaneously reduce power consumption, maximize resource utilization and avoid traffic congestion.

Index Terms

Computer Science  
Distributed Systems

Keywords

Virtual Machine[VM], Data Center [DC], IT Resource Allocators [ITRA], First Fit[FT], Best Fit[BF], Worst Fit[WF], Multi-Objective Dynamic Allocator[MODA], Fuzzy Logic Controller[FLC], Analytic IT Resource Allocators[A-ITRA], Fuzzy IT Resource Allocators[F-ITRA].