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**ENERGY-EFFICIENT VIRTUAL RESOURCE DYNAMIC INTEGRATION METHOD IN CLOUD COMPUTING**

**Abstract:**

In recent years, with the development of cloud computing technology, the size of a data center is expanding rapidly. To minimize the energy consumption of a data center, we propose an energy-efficient virtual resource dynamic integration (VRDI) method. In the proposed VRDI method, first, by monitoring the load patterns of the physical machines (PMs) and the corresponding thresholds of PMs calculated using the statistical data, we propose a PM selection algorithm to find a set of PMs, which should be integrated. Furthermore, we propose a virtual machine (VM) selection algorithm based on minimum migration policy to select the VMs that are deployed on the integrated PMs. Finally, to solve the target VM placement, we propose a VM placement algorithm based on an improved genetic algorithm. Using the encoding, crossover and mutation operations of the genetic algorithm, we obtain an effective solution for the VM placement problem. The experiments show that the proposed VRDI method can reduce the energy consumption of data center and ensure the quality of service of the cloud applications developed on the VMs.