基于 SLA 约束的 IaaS 虚拟机的多维资源放置算法

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摘 要：针对 IaaS 层资源放置中的虚机放置问题，提出了 IaaS 云资源放置 SLA 的服务质量指标模型和基于 QoS 的多维度差分进化放置算法。算法采用差分进化算法结合非支配排序思想，通过对非支配排序在排序方式以及子代筛选上进行优化，实现对 IaaS 的资源放置时兼顾多种类资源约束以及其他服务质量指标约束，从而获得更合理的多类型资源放置结果. 实验结果表明本文提出的多维资源虚机放置算法搜索速度快，多维资源放置结果产生的违约率更低，在 QoS 指标上具备更优的性能.

关键词：IaaS 层资源；SLA；非支配排序；虚机放置

Multidimensional Resource Placement Algorithm for IaaS Virtual Machine Based on SLA Constraint

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Abstract：Resource placement of IaaS service model is essential to the cloud infrastructure resource placement. This paper studies the virtual machine placement problem in the resource placement of the IaaS layer, presents quality of service model of the SLA in IaaS cloud resource placement, and then propose a muti-dimensional differential evolutionary algorithm base on QoS. The Algorithm combined with the non-dominate sorting and the differential evolution algorithm, and optimized speed sorting and filtering on progeny in the non-dominate, achieve taking into account the many types of resource constraints and other objective constraints when the resource placement of IaaS. Obtain more reasonable multiple types of resource placement result accordingly. Finally, the simulation results show that, to compared with other traditional heuristic algorithms, the proposed muti-dimensional resource VM placement algorithm is more faster in search, meanwhile the final result of the search get the minimum default rate, it has better performance on QoS metric, thus verifying the validity of algorithm.

Key words：IaaS resource；SLA；Non-dominated sorting；VM placement

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