

RESOURCE UTILIZATION-AWARE COLLABORATIVE OPTIMIZATION OF IAAS CLOUD SERVICE COMPOSITION FOR DATA-INTENSIVE APPLICATIONS

ABSTRACT

Recently, growing cloud services (CSs) have been leased by organizations for high-performance computation and massive data storage of data-intensive applications (DiAs). To improve the resource utilization of leased CSs, it has become a challenging task to optimize infrastructure as a service CS composition for DiAs (ICSCDs) from the user side. This project proposes a resource utilization-aware collaborative optimization approach. Targeting the collaboration features of tasks in a DiA, the environments—classes, agents, roles, groups, and objects model is used to formalize the ICSCD problem from the perspective of role-based collaboration. Aiming at the dynamic characteristics of the cloud environment, an integrated method is presented to evaluate the qualification of CSs via the interval numbers with multiple parameters. Based on the exact qualification values, the ICSCD can be optimized for improving the resource utilization of the CSs. A solution using the IBM ILOG CPLEX optimization package is put forward to solve the problem.