

Paper Title:

Heterogeneous Task Co-location in Containerized Cloud Computing Environments

Paper Link:

<https://ieeexplore.ieee.org/document/9112926>

1 - Summary

1.1 Motivation

The paper proposes a containerized task co-location (CTCL) scheduler to improve resource utilization and minimize task eviction rate.

1.2 Contribution

The paper uses CTCL scheduler which applies an elastic task co-location strategy to improve resource utilization and supports a dynamic task rescheduling mechanism to prevent severe QoS degradation from frequent task evictions.

1.3 Methodology

Their approaches were evaluated in terms of resource efficiency and rescheduling cost through the ContainerCloudSim simulator. In addition, workload characterization, behavior identification, scheduling, scaling and rescheduling applied.

1.4 Conclusion

The experiments with the Alibaba 2018 workload traces demonstrate that CTCL could improve overall resource efficiency and reduce rescheduling rate by 38% and 99% respectively.

2 - Limitations

2.1 First Limitation

As the study was done, it is yet to done CTCL to support task co-location under other workload management scenarios, such as network-intensive applications competing for shared network resources with potential performance interference.

3 - Synthesis

The findings can be applied to large-scale cluster management for resource efficiency optimization, cost saving, and QoS assurance.