Scheduling Stochastic Multi-stage Jobs to Elastic Hybrid Cloud Resources

ABSTRACT

- Three optimization objectives are explored number, usage time and utilization of rented VMs.
- An iterated heuristic framework is presented to schedule jobs event by event which mainly consists of job collecting and event scheduling.
- Two job collecting strategies are proposed and two timetabling methods are developed.
- The proposed methods are calibrated through detailed designs of experiments and sound statistical techniques.

EXISTING SYSTEM

- We consider a special workflow scheduling problem in a hybrid-cloud-based workflow management system in which tasks are linearly dependent, compute-intensive, stochastic, deadline-constrained and executed on elastic and distributed cloud resources.
- This kind of problems closely resemble many real-time and workflow-based applications.
- With the calibrated components and parameters, the proposed algorithm is compared to existing methods for related problems.

PROPOSED SYSTEM

- JCS periodically collects stochastic jobs and SMS schedules them.
- In the SMS, we developed two timetabling methods for schedule generation and a local search method for schedule improvement.
- STM generates the timetable using a stage-by-stage strategy while TTM adopts a task-by-task strategy.
- When JCS collects some not started tasks for SMS to reschedule, there is a greater probability of DES yielding better solutions.

HARDWARE REQUIREMENTS

- Processor - Intel core i3
- RAM - 2B
- Hard Disk - 20 GB

SOFTWARE REQUIREMENTS

- Operating System : LINUX
- Tool : Network Simulator-2
- Front End : OTCL (Object Oriented Tool Command Language)

REFERENCE

[1] X. Zhang, L. T. Yang, C. Liu, and J. Chen, "A scalable two-phase top-down specialization approach for data anonymization using mapreduce on cloud,", 2014.

[2] X. Li, T. Jiang, and R. Ruiz, "Heuristics for periodical batch job scheduling in a mapreduce computing framework," 2016.

[3] T. Y. Wu, C. Y. Chen, L. S. Kuo, W. T. Lee, and H. C. Chao, "Cloud-based image processing system with priority-based data distribution mechanism," 2012.

[4] M. D. D. Assuncao, C. H. Cardonha, M. A. S. Netto, and R. L. F. Cunha, "Impact of user patience on auto-scaling resource capacity for cloud services," 2015.