The Application of Bayesian Heuristic for Scheduling in Real-Time Private Clouds

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Abstract : The emergence of Cloud data centers has revolutionized the IT industry. Private Clouds in specific provide Cloud services for certain group of customers/businesses. In a real-time private Cloud each task that is given to the system has a deadline that desirably should not be violated. Scheduling tasks in a real-time private CLoud determine the way available resources in the system are shared among incoming tasks. The aim of the scheduling policy is to optimize the system outcome which for a real-time private Cloud can include: energy consumption, deadline violation, execution time and the number of host switches. Different scheduling policies can be used for scheduling. Each lead to a sub-optimal outcome in a certain settings of the system. A Bayesian Scheduling strategy is proposed for scheduling to further improve the system outcome. The Bayesian strategy showed to outperform all selected policies. It also has the flexibility in dealing with complex pattern of incoming task and has the ability to adapt.

Keywords : cloud computing, scheduling, real-time private cloud, bayesian
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