Evaluating the Prediction Accuracy of Generated Performance Models in Up-and Downscaling Scenarios

This paper evaluates an improved performance model generation approach for Java Enterprise Edition (EE) applications. Performance models are generated for a Java EE application deployment and are used as input for a simulation engine to predict performance (i.e., response time, throughput, resource utilization) in up- and downscaling scenarios. Performance is predicted for increased and reduced numbers of CPU cores as well as for different workload scenarios. Simulation results are compared with measurements for corresponding scenarios using average values and measures of dispersion to evaluate the prediction accuracy of the models. The results show that these models predict mean response time, CPU utilization and throughput in all scenarios with a relative error of mostly below 20.
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