

Predicting VM Behavior for DRS & DPM Cost/Benefit Analysis

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To better analyze and handle the impact of long-latency operations such as host power-off/-on and VMotion of large memory VMs, DRS operation could move toward a more proactive model, for which accurate prediction of VM behavior is important. In this project we first define the underlying concepts for VM behavior prediction including prediction goodness measures and the representation of stable characteristics. Three predictors, Oracle, simple reactive predictor and GlitchFree have been implemented and evaluated. We identify two points of improvement to achieve better prediction accuracy: (i) Mitigating glitch behavior of VM workloads; and (ii) using a forward-walk approach to get consistent history information. We have implemented a new predictor, GlitchFree, which incorporates these points and provides 1.7X average improvements to simple reactive approach on prediction accuracy. These predictors are evaluated on real customer workload traces extracted from drm dump files. Our ongoing and future work includes the evaluation of new predictors--namely, a probability-based GlitchFree predictor and a linearly-decreasing stable time predictor--and refining of our current goodness measure.