A Novel Methodology for Benchmarking the Hypervisors over Heterogeneous Workloads - Multi Vari Approach

Abstract

The main objective of this work is to implement the Multivari approach along with Design of Experiment (DOE) framework to effectively benchmark the hypervisors over heterogeneous workloads. Multivari approach determines the interaction effect very easily for many factors at a time by keeping panel parameter constant. This experiment has given a very interesting way to benchmarking the hypervisors over heterogeneous workloads. The presented work gives a flexible base for performance investigation on how the heterogeneous workloads perform over different hypervisors which in turn helps us to choose high performance hypervisor for the user workloads.

Reference

- Susan M. Sanchez, Paul J. Sanchez "Very large fractional factorial and central composite designs" Transactions on Modeling and Computer Simulation (TOMACS) , Volume 15 Issue 4,
October 2005
http://dspace.mit.edu/bitstream/1721.1/35303/1/75960345.pdf
 - Prabu D, Devi Prasad B, Lakshminarayana Prasad K, “Performance Tuning of Storage System using Design of Experiments”, Proceeding of 33rd International Conference of Computer Measurement Group (CMG’07), San Diego, California, USA.
 - Jack P. C. Kleijnen “Design of experiments: overview” Winter Simulation Conference, December 2008,
 - Miroslav N. Velev, Ping Gao, “Efficient SAT-Based Techniques for Design of Experiments by Using Static Variable Ordering”, 10th Int’l Symposium on Quality Electronic Design
 - David Bauer, Garrett Yaun, Christopher D. Carothers, Murat Yuksel, Shivkumar Kalyanaraman "A case study in meta-simulation design and performance analysis for large-scale networks" Proceedings of the 36th conference on Winter simulation, December 2004
 - Felipe F. Baesler, Eduardo Araya, Francisco J. Ramis, José A. Sepúlveda "The use of simulation and design of experiments for productivity improvement in the sawmill industry" Proceedings of the 36th conference on Winter simulation, December 2004
 - Kirk L. Kroeker,” The evolution of virtualization “March 2009, ACM
 - Igor Burdonov, Alexander Kosachev, Pavel Iakovenko” Virtualization-based separation of privilege: working with sensitive data in untrusted environment” March 2009, ACM
 - Youssef Laarouchi, Yves Deswarte, David Powell, Jean Arlat, Eric De Nadai, “Enhancing dependability in avionics using virtualization “March 2009, ACM
 - Himanshu Raj, Karsten Schwan,” Extending virtualization services with trust guarantees via behavioral monitoring “March 2009, ACM
- Anand Tikotekar, Geoffoy Vallee, Thomas Naughton, Hong Ong, Christian Engelmann, Stephen L. Scott, Anthony M. Filippi “effect of virtualization on a scientific application running a hyperspectral radiative transfer code on virtual machines” March 2008, ACM.

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