Mesabi Group

Commentary

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Load DynamiX: Optimizing Large Storage Infrastructures

Large storage infrastructures are dynamically complex. Trying to get the best performance, availability, and cost for these infrastructures is challenging. Load DynamiX through its storage infrastructure performance validation products enables IT organizations to meet this challenge.

Large storage infrastructures are inherently complex, and their complexity is further exacerbated by the fact that they are not static, but rather dynamic. Dynamic changes include new and modified applications with demanding performance requirements, the possible addition of new technologies, such as solid-state devices (SSDs), tiers of storage, and new combinations/patterns in the infrastructure, such as object-based cloud storage, in conjunction with existing on-premise file and block-based storage.

Trying to figure out how to get the best possible performance, availability and cost for such storage infrastructures is challenging. The rewards for meeting that challenge for any enterprise that spends millions of dollars annually on its storage infrastructure are not only cost savings, but also a storage infrastructure that delivers the necessary performance and availability in a timely manner, as well as matching the organization's required needs. Load DynamiX's goal is to enable enterprises to meet those challenges.

Introducing Load DynamiX

The company does this through its storage infrastructure performance validation products. Load DynamiX takes workload I/O profiles and runs them through its Load DynamiX Enterprise software. The software, which is the heart of the approach, runs on a company-designed performance validation appliance, which is basically a means to run the necessary storage protocols at extreme load levels in conjunction with storage for required testing purposes. The output from the software is performance analytics, including IOPS, throughput and latency.

This I/O profile and modeling of applications is a challenging and complex task for storage engineers. Load DynamiX Enterprise software tests storage infrastructure performance over a broad range of workload scenarios to deliver a workload modeling process that provides a deep understanding of how an evolving storage infrastructure will perform in production. This yields performance validation of distributed and virtualized environments deployed with any

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file, block, or object-based cloud storage system.

Who can use Load DynamiX

It should come as no surprise that large IT technology vendors — Dell, EMC, Hitachi Data Systems, HP, IBM, NetApp, and Oracle among others — as well as most smaller companies use Load DynamiX. After all, this gets to the heart of their and their customers' business. In addition, large non-IT infrastructure enterprises, such as AT&T, General Electric, PayPal, Nationwide Insurance and United Healthcare are also taking advantage of Load DynamiX.

Now, Load DynamiX is not inexpensive, with a six figures expenditure typically required to get in the game. An easy way to determine whether or not an enterprise can afford to do so is whether or not it employs storage architects or storage engineers by title and not just storage administrators. If it does, that company probably has a large enough storage infrastructure budget to justify and benefit from Load DynamiX software if it so desires.

Evolving Load DynamiX Enterprise

Just as the storage infrastructure keeps evolving, so does Load DynamiX software. A key capability is a new Composite Workload Editor facility in Load DynamiX Enterprise that extends modeling and performance profiling to simulate even more complex workloads.

These include applications with multiple access patterns, such as ERP, CRM and databases. An example is an Oracle Real-Application Cluster (RAC) with multiple access patterns. Each node can perform multiple tasks where different tasks access different LUNs and each task has a discrete access pattern. The end result is accurate modelling of end-to-end behavior that provides more realistic results for better decision-making on how to configure and provision the storage infrastructure to efficiently meet the application's needs.

These also include the ever more complicated I/O blenders from virtualized applications and environments. Hypervisors arbitrate I/O access across their virtual machines, but the traffic patterns that are observed at the guest are not what are seen at the array. The Composite Workload Editor accurately models workload behavior in these complex environments.

In addition, consider multiprotocol/unified storage deployments. In a multiple tier application, each tier's behavior has to be modeled since, without modeling total behavior, users cannot validate hotspots and performance issues. The Composite Workload Editor solves this problem by modeling total behavior in these environments.

All in all, storage engineers can use the Composite Workload Editor to generate realistic workloads that better represent application specific scenarios that they need to evaluate than they could do otherwise.

In addition, Load DynamiX's latest release will offer a number of other capabilities, such as native OpenStack protocol validation support, support for object storage (notably Amazon S3) and simulation of run-time VDI workloads.

Key uses of storage infrastructure performance validation software

Load DynamiX serves a number of customer needs targeted at storage engineers and architects. Two are pre-production staging validation to assist with the hot staging and burn-in processes that need to be undertaken when implementing new storage environments, as well as assisting in the change validation process to measure the effects of hardware and software changes before live production deployment. Load

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DynamiX can also be used at other stages of the storage life cycle, such as in a technology evaluation for associated technologies like flash or OpenStack. Product evaluation enables the selection of the best products to meet specific workloads, while configuration optimization provides support for the best tiering, caching and SSD/HDD mix. All of these are conducted in a pre-production environment.

Mesabi Musings

Understanding the intricacies and interwoven workload processes in demanding storage infrastructure environments with many applications and innumerable I/O access patterns is a major challenge for any enterprise storage owner. Enabling storage architects and storage engineers to do the workload modeling that simulates the I/O profiles of their production environment as well as the performance profiling that characterizes performance of storage under a wide variety of load parameters is what Load DynamiX does. By using the company's innovative solutions, storage architects and storage engineers can make better technology, product, and configuration decisions that help meet their companies' performance, availability and cost-efficiency objectives.

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