Load Dynamix Enterprise VDI Workload Models

Storage performance planning for VDI deployments

By using Load DynamiX's VDI workload models, IT organizations can accurately simulate how well the underlying VDI storage infrastructure will perform based on a variety of real-world testing scenarios. Load DynamiX's approach provides a more in-depth picture of how the VDI environment will perform under production loads compared to alternative testing tools.

Knowing that your Virtual Desktop Initiative (VDI) implementation will meet your performance requirements requires an understanding beyond the typical high-level analysis provided by other VDI tools that simply report the performance of VDI instances. Deep understanding of the underlying storage infrastructure and protocol transactions is as important as knowing how many and how fast the VDI instances can boot up.

Highlights

Avoid VDI performance issues by leveraging a workload model that provides unprecedented realism and scales to tens of thousands of VDI users

Load DynamiX offers VDI Workload Models that deliver the industry's richest analysis of storage protocol performance, empowering storage architects with the critical data to determine the optimal VDI storage solution and design, in addition to top level analysis of application level performance such as Boot Storm time and booting latency.

Solution Summary

The Load DynamiX VDI Workload Models are designed to help infrastructure architects verify their storage selection and infra structure design by simulating a large scale VDI deployment and delivering rich statistics from the top to the bottom, traversing the entire storage protocol and network layer stacks.

The primary focus of the NFS-based workload is to understand the most I/O demanding part of the VDI lifecycle – the VDI boot storm process. This Load DynamiX solution offers an extremely simple to understand user interface that allows architects to input key assumptions and then simulate those conditions against a networked storage system, including all flash and hybrid storage arrays that support the NFSv3 protocol.

The primary focus of the FC and iSCSI-based workloads is to simulate the behavior of operational VDI Guests deployed over block storage, giving you the ability to specify the size and load created by each VDI Guest.

Feature Highlights

Simple workflow

Implementing VDI is complex enough, but we can make it easier.

The Load DynamiX NFS VDI Workload Model exposes the most critical workload simulation parameters to the user, and handles the complexity of the NFSv3 protocol operations behind the scenes. The user specifies the Replica size, Linked clone size, the number of VMs to boot, and several other key parameters. As Figure 1 below illustrates, Load DynamiX creates the VDI deployment with the Replicas and Linked Clones exactly as defined, and simulates the boot storm scenario with realistic booting operations performed on the Replicas and Linked Clones created.

Intuitive KPIs

Load DynamiX Enterprise performance reports are simple to understand, yet highly informative. In this example below, the Key Performance Indicators (KPIs) report on the top level analysis of the Boot

Figure 1: Easily understand the VDI boot storm process by using the Load DynamiX Enterprise VDI Workload Model to specify the key parameters of your VDI environment

Storm test. They show how VMs are deployed over time, the build-up over time when the VMs become fully functional, and the peak loading due to the VM boot storm process. They also provide a multitude of latency, IOPS, and throughput metrics that can be used to compare the output of one run (vendor/product) against another run (vendor/ product). As shown in Figure 2 below, results can be directly compared to see which storage system is best given the available storage budget, based on the workload characteristics provided and configurations evaluated.
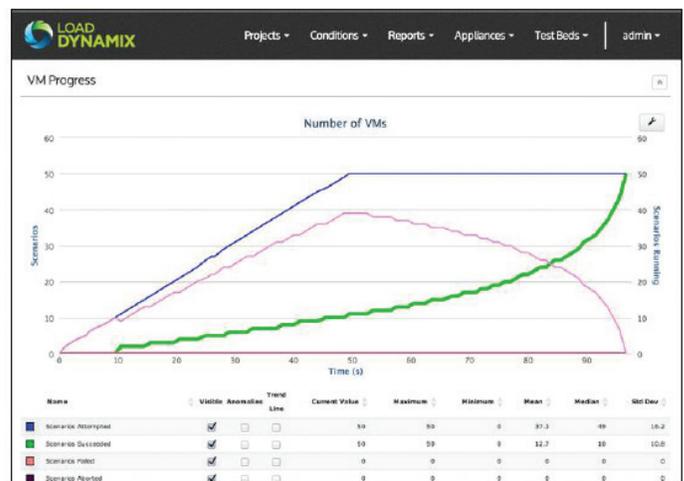

Figure 2: Load DynamiX Enterprise's KPI report on the top level analysis of a boot storm test.

The Load DynamiX FC and iSCSI Workload Models simulate run time activities of multiple desktops based on the Linked Clone model. The Linked Clones are combined in Pools with 2000 Linked Clones per pool being a maximum. The Linked Clones are located in datastores which represent a FC or iSCSI LUs in this model. The number of Pools is limited by the number of Appliance Physical Ports used in the Testbed.

By design, there is a 1-1 relationship between the Pool and the Physical Port. This workload will generate Read/Write operations distributed randomly within the region of the LUs occupied by Linked Clones. The size of these operations and their rate vary according to a statistical model trained on experimental data.

The VDI parameters for the Runtime workload allow you to specify the number of VDI Pools, datastores per pool, and linked clone characteristics including the load in IOPs per linked clone.

Figure 3: Easily understand VDI runtime performance in FC and iSCSI deployments by using the Load DynamiX Enterprise VDI Workload

Comprehensive Statistics

Load DynamiX offers the storage industry's most powerful test and validation appliance. Load DynamiX differs from other VDI testing solutions in that it is designed from the bottom up, delivering insights into storage performance bottlenecks at critical layers that others cannot identify. Load DynamiX appliances provide not only the top level KPIs, but also detailed request response statistics at a per-command level. In addition, detailed TCP layer statistics and errors are also provided to the user, as shown in Figure 4 below.
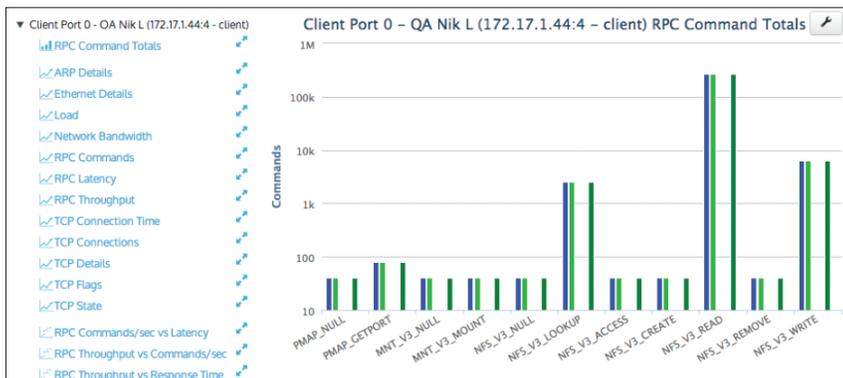

Figure 4: No other company can deliver such comprehensive statistics from its reporting engine.

Comprehensive Storage Solution

While the Load DynamiX VDI Workload Models are key indicators of performance, your storage infrastructure cannot be validated with VDI simulation alone. Load DynamiX offers the industry's richest and deepest coverage of storage technologies, giving architects comprehensive insight into how the infrastructure handles compression, deduplication, concurrency, raw throughput, IOPS, latency, and much more.

With the VDI Workload Models, tests can be repeated for thousands or even tens of thousands of users run across a multitude of vendors, products and configurations to determine the optimal cost/performance trade-offs for your specific VDI environment. Determining the optimal trade-offs of deploying flash/SSDs versus hard disk drives (HDDs) is a fundamental question that can only be answered with the Load DynamiX VDI Workload Models.

Summary

The Load DynamiX Enterprise VDI Workload Models are ideal for determining storage solutions that are best suited to your particular user population and VDI characteristics. As shown in Figure 5 below, sizing storage based on performance requirements has never been easier due to:

- A cost-effective 2RU appliance that can scale to tens of thousands of VDI users,

- Deep protocol analysis, and

- Comprehensive coverage of file, block and object based storage technologies.

With Load DynamiX, performance will be assured and costs will be fully aligned to performance without the fear of under or over-provisioning storage. In addition, Load DynamiX can be used post-deployment to help gain visibility into any potential performance bottlenecks that may creep into the environment as changes are made to the infrastructure – such as adding more virtual desktops to another network segment.
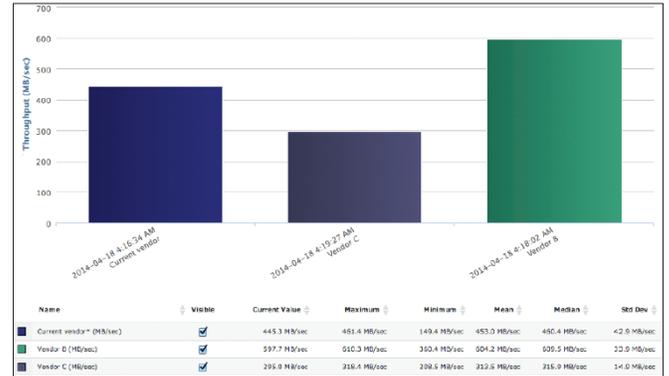

Figure 5: Load DynamiX Enterprise report showing the results of which storage system responded most favorably to a performance test using the NFS VDI Workload Model.

Required Components

- Load DynamiX Enterprise version 2.6 or later

- Load DynamiX Appliance Series

- NFSv3 Protocol for the NFS workload

- FC or iSCSI Protocols for the FC and iSCSI workloads