

12 Ways that VirtualWisdom® Enhances your Existing VMware and SAN Management Tools

The only hope of meeting today's IT-enabled missions and avoiding skyrocketing costs, involves utilizing virtual data center technologies, augmented with more modern management tools. There are many legacy tools, but none provide a complete end-to-end solution that enable IT to avoid wasteful over-provisioning while at the same time, ensuring adherence to Service Level Agreements (SLAs).

Fortunately, there is a new category of products which helps fill the gaps in today's management tools. According to a 2009 study by the Taneja Group, "Virtual Infrastructure Optimization will be one of the most pivotal technologies in defining the capabilities of the next generation data center", and they go on to name Virtual Instruments' VirtualWisdom as a leading example.

Virtual Instruments is a leading provider of innovative solutions to instrument, measure, analyze, and optimize storage area networks and virtualized infrastructures powered by VMware.

VirtualWisdom provides real time, continuous SAN monitoring that enables the gathering of detailed VM or host-to-LUN statistics from high traffic fabric links to increase performance, utilization, and availability. VirtualWisdom provides visibility to all Host/VM/LUN conversations allowing the accurate measurement of application transaction times within the virtualized environment, and highlighting SAN-induced latency issues that dramatically impact application performance and service level agreements.

Though every product you see listed at the right claims to do performance monitoring, they all lack physical, real-time monitoring of the entire I/O path, and none of them can prove whether an application performance problem is caused by the SAN. VirtualWisdom collects crucial link layer data, as well as the higher level data from the switches and servers, and offers unprecedented cross-domain correlation across the entire environment. VirtualWisdom is the only platform that can non-intrusively optimize the performance of applications, in continuous real-time, by measuring actual SAN I/O traffic data. VirtualWisdom:

1. Adds continuous real time monitoring and filtering that calculates statistics based on seeing every SAN transaction, while adding no latency or risk. Other products use polling or averaging techniques that simply do not see every transaction and frequently miss the causes of business-impacting problems.
2. Instantly proves whether or not the SAN is the cause of application slowdowns, often reducing root cause analysis from weeks/months to hours/days. At best, the management product you are probably using today reports IOPS or MB/s, which are almost worthless metrics for SAN troubleshooting. By far, the best measure of performance is the effect of the SAN on application response time for every transaction. Looking at IOPS or MB/s is like looking at an automobile speedometer, and guessing how long it takes to go to the PX and back for a loaf of bread.
3. Enables you to do "what if" analyses using actual production data, substantially improving the capacity planning and optimization of your SAN and VMware virtualized infrastructure.
4. Adds a dedicated traffic and protocol approach to monitoring applications to ensure accurate knowledge about the data movement and data integrity throughout the SAN. Though legacy tools call themselves "out of band", they are referring to the data path, and for non-performance-oriented functions like capacity management, they are indeed out of band. They do not affect capacity reporting, but they do affect performance and performance reporting, because they consume CPU cycles on each of the infrastructure components.
5. Adds event recording and real time capture capabilities and does not rely on "averages" or polling, which often occurs in 1 – 5 minute intervals. Polling and averaging invariably

Legacy Management Examples

- **Storage Resource Management**
 - Aptare Storage Console
 - EMC Ionix Control Center
 - EMC Ionix Storage Configuration Advisor
 - EMC V-Max FAST
 - HDS Storage Server Manager
 - HDS IT Operations Analyzer
 - HDS Tuning Manager
 - HDS Storage Command Portal
 - HP StorageWorks Essentials
 - NetApp SANscreen
 - Symantec Veritas CommandCentral Storage
- **SAN Fabric Managers**
 - Brocade DCFM
 - Cisco Fabric Manager
- **Network Monitors**
 - CA UniCenter/Spectrum
 - HP OpenView
 - IBM Tivoli Monitoring
- **Storage Virtualization Managers**
 - IBM San Volume Controller
 - LSI SAN Volume Manager
 - HDS USP-V
 - EMC Invista
 - DataCore SANsymphony
- **Server Virtualization / Application Managers**
 - Aternity FPI
 - VMware AppSpeed
 - Akorri BalancePoint
 - BlueStripe FactFinder
 - eG Innovations eG Suite
 - Embotics V-Com
 - Fortisphere VE
 - Knoa EPM
 - ManageIQ EVM
 - Netuitive SI
 - Quest Foglight & Spotlight
 - Reflex Systems VMC
 - Surgient VA
 - Veeam Monitor and nworks
 - VizionCore vFoglight

miss meaningful transaction events. Legacy tools rely on resources in the environment to monitor themselves and then they query those resources for what that resource “believes” to be the state of the transactions and its health, which changes from one firmware release to the next, and one product to the next.

6. Adds performance trending of SAN device components to identify hardware degradation and enable you to preemptively replace components before they actually fail, which dramatically reduces potential outages. SAN components usually don’t fail catastrophically; they degrade or exhibit intermittent problems. It is often difficult to pinpoint problems and bottlenecks in a production SAN, let alone correct them. VirtualWisdom can identify not only a device failure when a device stops responding to the metric collection queries from the software, or when the traffic through the device comes to a halt or when the device logs out, but also a deteriorating or a misbehaving device, by continuously monitoring and comparing to the known good baseline.
7. Adds the ability to gather in-depth Fibre Channel network statistics such as pending exchanges, to tune queue depths for maximum performance. In the days of direct-attached storage, when the I/O performance bottleneck was disk transfer rate, existing storage array tools would be sufficient to determine where to place data for an optimum balance of performance and cost. But today, in the world of shared storage, it’s much too simplistic to look just at external transfer rates of disk drives, which may have up to a 4 times difference in performance. Not having HBA queue depths set properly can have a 10 times impact on response time. Virtual Instruments gives you the complete picture.
8. Adds the ability to determine if configuration changes are affecting SAN performance by examining SAN latency. Federal agencies can significantly lower the risk of consolidation projects, or of moving data to lower cost storage tiers by reporting on the effect of the change to application response time.
9. Enables more effective use of storage tiering, especially in environments using storage virtualization techniques. Most tiering products use IOPS, MB/s or access frequency to recommend moving data to another tier. Only by seeing the actual effect of the move on application response time can you eliminate all performance risks in tiering decisions.
10. Adds remote replication performance and network health troubleshooting. Provides visibility into remote replication throughput and response requirements, enabling stress testing of remote replication infrastructure, providing insight into remote link throughput and latencies, and identifying any misbehavior in the remote replication infrastructure either in the primary SAN, the remote SAN, or on the WAN link/equipment.
11. Uses hardware probes that do not rely on APIs or SAN firmware changes, so they include support of all SAN devices ... including legacy devices, other vendor devices, or the latest bleeding-edge components. VirtualWisdom is ideally suited for change management verification and validation because it is resource & device independent.
12. Is available as a Professional Services consulting engagement through federal integrators, to help offload IT staff with our specialists, and to help those who are constrained by budget cycles, or who have other uses for capital spending.

SUMMARY

Because of its unique design and continuous real time physical layer monitoring, Virtual Instruments' VirtualWisdom can perform crucial functions that other systems are not designed to provide. Virtual Instruments can play a significant role in maintaining SAN health, optimizing storage tiering, and removing the risk of putting mission-critical applications in virtualized environments. As an important bonus, VirtualWisdom is available as a product or as a service offering. When other solutions fail, federal agency data centers rely on VirtualWisdom as the ultimate performance analysis and virtual infrastructure optimization solutions.



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