

Fifteen Ways that VirtualWisdom Compares to and Complements Software-only-based Monitoring & Management Tools

Virtual Instruments is a leading provider of innovative solutions to instrument, measure, analyze, and optimize Storage Area Networks (SAN), Network Attached Storage (NAS) and virtualized server infrastructure.

Datacenter Network Monitors, Operations Managers, storage element managers, VM Managers, SRMs, NPMs, APMs, and the other alphabet-soup of software-based managers and monitors such as SolarWinds Storage Resource Monitor, NetApp's OnCommand Insight, Brocade Network Advisor, New Relic's APM and Insight, Turbonomic's Operations Manager, Splunk Enterprise+apps, Aptare StorageConsole, CA's UIM (formerly NimSoft), VMware's vRealize Suite, HPE Storage Operations Manager, EMC's VIPR Controller, OneFS, and Unisphere, IBM's TPC / NetCool, and dozens more, all share two common deficiencies.

- First, their dashboards and reports suffer from lack of all-inclusive correlations and lack of advanced analytics. VirtualWisdom's performance analytics don't require you to know where to look for problem causes.

Our trend matcher and "heat map" look at over 400 metrics and direct you to what's causing the problem. And without writing a single report, our real-time dashboard lets you see the most granular performance metrics end-to-end, VM-to-storage, for every VM and every LUN or file.

- Second, they do not monitor performance "on the wire". They read log files and poll discrete devices via a variety of protocols, but they do not see every I/O from the VM/host to the LUN or file system. So they take averages, which miss many important events and are unsuitable for mission-critical application environments.

VirtualWisdom sees the physical layer so can uncover the hardest-to-find issues like slow-draining devices and CRC errors.

This is not to say that these products do not have great value; in fact, they do. The proprietary element managers are critical to seeing and understanding the deepest metrics of their respective devices, and nothing can replace them. The heterogeneous monitoring platforms often offer "end-to-end" performance monitoring, and to some extent, they do. But they all start with deep domain expertise in one siloed domain, then claim additional market relevance by offering simple metrics on the other infrastructure component domains. Some even add active resource management to their domain of focus.

But VirtualWisdom is the only platform that can non-intrusively optimize the performance of applications, in continuous real-time by measuring each and every SAN/NAS I/O, from the VM to the datastore, at huge scale, without agents, and without requiring a PhD in Performance-ology.

VirtualWisdom:

1. Adds continuous real time monitoring and filtering that calculate statistics based on seeing "all" the fibre channel frames or IP packets that are traveling through the storage network, from the host/VM to the LUN, while adding no latency or risk. Software-only-based tools poll and average metrics. Imagine asking this question: "Do I ever hit 100% utilization on a

Summary

Vendor-specific storage element managers are great at monitoring and managing their respective point products. Software monitoring and management products, like SRMs, storage virtualizers, APMs, NPMs, CPMs, Operations Mgmt, and VM Mgmt Tools, may track application metrics, network metrics, server and VM metrics in addition to some storage data, but application centric storage focused performance is not what they are built for. And they are not deep or granular enough to provide support for mission critical applications. They miss important events that can result in slowdowns and even downtime.

Though all tools claim to do some level of performance and root cause analysis, none look at the physical I/O layer, what is referred to as "wire data". None can see what VirtualWisdom sees or find what VirtualWisdom finds.

VirtualWisdom is purpose-built for large enterprises which, to stay competitive, must optimize application performance, availability, and resources in their storage infrastructure, while capping costs.

datastore?” And you’re getting the answer from a 5-minute average from a software-only tool. Maybe utilization is 100% for 2 minutes, then its 50% for 3 minutes. That would show up as 70% utilized, and you would think you have room to grow! At VirtualWisdom’s one-second reporting granularity, you would know without a doubt that you are exhausting that resource.

2. Does more than simply measure and monitor; it filters and alerts. The intelligent probes automatically gather, analyze and report on relevant statistics taken from every SAN/NAS transaction. So in real time or for any historical period, it can report on metrics like the top 10 most utilized ports or the LUNs with the worst write exchanges.
3. Reports on the minimum and maximum transaction times for ALL transactions. With software-based tools, when you combine one command that takes 30 seconds with a million others, everything looks fine. But the one command that took 30 seconds is a failure, and VirtualWisdom knows it. And so do you.
4. Advanced analytics are designed to do more than correlate events; they lead you to the problem cause. With software-only-based tools, you can get reports on port or VM utilization, but there’s no inherent intelligence that quickly leads you to trouble spots. It’s one thing to know there’s a problem, it’s quite another thing to know the cause.
5. Case-based and seasonal alarms ensure that you’re only alerted to events that are truly critical. Most monitoring tools create so many alerts that they are often simply turned off or ignored.
6. Instantly proves whether or not the SAN/NAS, or changes to the SAN/NAS, are the cause of application slowdowns. Software-only-based tools can infer causality; but can’t prove it, because they have no metric that reports the effect of the storage network infrastructure on application latency.

Software-only-based tools usually report IOPS or MB/s, which are readily available, but are not very worthwhile measures of true storage performance, unless your application is backup. 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 market for a loaf of bread. Some tools offer latency figures, but as averages, they are only useful for high-level views of performance.

7. Adds a dedicated traffic and protocol approach to monitoring applications to ensure accurate knowledge about the data movement and data integrity throughout the SAN/NAS. VirtualWisdom does not depend on vendor APIs so it supports all storage equally and without any excuses. Software-only-based tools poll at intervals, and depend on component APIs and specific firmware releases. What happens when that API changes, or a new device is introduced, or you acquire a new division that has components not supported by software-only-based tools? You get to file a “feature request” and wait for the release with that support.
8. Adds virtually unlimited event recording and real time capture capabilities. Software-only-based approaches often cannot capture and record events, or the granularity or timeframes are very limited, which causes a significant hole in performance analysis. They may keep some history, but only of broad aggregates or samples, which

What Gartner says:
In its paper entitled “Optimize IT Operations Using ITSM, ITIL, and DevOps Primer for 2016”, Gartner has a lot to say about the merits of “wire data” and how it’s becoming increasingly important. We encourage Gartner customers to acquire this report.

Select Gartner quotes:
“While log data will certainly have a role in future monitoring and analytics, it is wire data — radically rethought and used in new ways — that will prove to be the most critical source of data for availability and performance management over the next five years.”

“Require the IT Operations Teams to Exploit Wire Data as a Source of Information and springboard for analysis of the entire IT Infrastructure and Application Portfolio in Production.”

“Machine data extracted from the nodes of an IT system will continue to contribute important information about the IT system state and behavior. However, wire data gleaned from the movement of packets across the

again, often miss critical problems, and are usually time-limited. With VirtualWisdom, you can see exactly what happened “last Tuesday from 3:05 - 3:33PM” and find those intermittent problems.

9. Adds performance trending of SAN/NAS device components to identify hardware degradation allowing you to preemptively replace components before they actually fail. Our customers report that due to this preventive capability, severity 1 problems are drastically reduced in their datacenters. Software-only-based tools can see errors at higher layers of the network stack. Finding SCSI errors at lower hardware levels would depend on whether the error is severe enough to filter up to the higher network protocol layers. This dependency leads to the high probability that many hardware related errors will go undetected, leading to performance bottlenecks, hardware device failures, and could eventually lead to a disruptive network failure.
10. Adds the ability to gather in-depth statistics such as pending exchanges to tune queue depths for maximum performance, or network credits to identify slow draining devices. Most monitoring products do not report on queue depth level, nor will they accurately report on the effect of queue depth changes. Most storage networks today are getting sub-optimal performance because their admins have to guess at how to set queue levels. Set your queue depths properly and see a free performance boost!
11. Adds the ability to determine if configuration changes are affecting performance by examining latency. You can use VirtualWisdom to compare performance and health before and after network changes to catch configuration problems before they impact business. This is particularly important in private cloud deployments which make extensive use of virtualization, which further reduces the transparency of problem cause and effect. Most monitors do not report on infrastructure I/O latency.
12. Provides a dashboard that correlates literally hundreds of metrics from the VM/application to the storage LUN/datastore, and provides a Heat Map to discover where the meaningful correlations are, substantially reducing the work required to find the “needle in the haystack”.
13. Provides a single pane of glass for storage and the VM admins, including vSphere, Hyper-V and PowerVM admins, and ANY storage, no matter the generation, or vendor.
14. Is scalable to the largest enterprise datacenters in the world, today supporting storage networks with over 95PB of storage and over 50,000 switch ports. Talk to our existing customers to validate the scale of our monitoring solutions. And VirtualWisdom information is the same regardless of the array. With software tools, the metrics are often different for each array, so you effectively have to learn a new product for each array. What does this metric mean? How would I use it? What is good and what is bad is different for each array.
15. VirtualWisdom can be used to export production application workload profiles to [Load DynamiX Enterprise](#), for creating the most realistic workload models, enabling IT architects to choose the best technology, products and configurations for their specific applications. It is also used to validate changes before they are moved into production, dramatically reducing the risk of performance problems upon cutover.

*network links ...
provide the core input
to any availability and
performance
analysis.”*

*“We don't need tens
and hundreds of
Infrastructure Admin's
because we've got a
solution that will allow
us to do the
monitoring and
alerting.”*

Simon Close
HEAD OF STORAGE, WM
MORRISON
SUPERMARKETS PLC

Summary

Because of its unique design and continuous real time physical layer monitoring of wire data, Virtual Instruments' VirtualWisdom can perform crucial functions that other systems cannot. VirtualWisdom is like a virtual SAN/NAS/VM administrator. It constantly scans for problems, alerting you if they find any, then has an expert set of tools to zero in and resolve them.

If you are currently using one of these software monitors or element managers, you still have problems you cannot easily solve.

If you have applications that cannot go down or slow down, call us for a demo, or sign up for a health-check with our [Infrastructure Performance Assessment](#). And if you're down now, call us and learn about our unique-in-the-industry [Emergency Troubleshooting Service](#)!



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