CLABBY ANALYTICS

Research Report

"Application Centricity": How Virtual Instruments Plans to Disrupt the Infrastructure Performance Management Marketplace

Executive Summary

Over the past few years Virtual Instruments (VI) has established itself as a leader in the Infrastructure Performance Management marketplace. The company started its foray into infrastructure management with a systems- and storage network-focused offering known as VirtualWisdom; followed by the merger with Load DynamiX (now WorkloadWisdom), which gave the company deep insight into storage subsystems performance; and then expanded into cloud infrastructure management with its acquisition of Xangati. Over the past three years VI has worked to closely integrate these offerings. A recent partnership with Cisco eliminates the need for hardware performance probes in some cases, reducing cost and complexity.

Fully armed with an entire suite of infrastructure management products that provide deep visibility into infrastructure behavior across systems, subsystems and the cloud, the company recently announced that it is shifting its emphasis to **managing application and workload behavior across the hybrid data center**. It calls its new approach "application centricity" because it focuses on monitoring, analyzing, optimizing performance, and on tracking the utilization and health of underlying infrastructure from an application/workload behavior point-of-view.

The new "application centric" version of Virtual Wisdom enables IT managers to better understand application behavior across multi-tenancy environments, hybrid data centers and cloud environments.

Using its flagship VirtualWisdom visualization dashboard and analytics, Virtual Instruments has shifted from device-specific infrastructure management (tuning and optimizing systems, storage and network performance in order to sustain/improve performance) to comprehensive infrastructure management in the context of the application. The new "application-centric" version of VirtualWisdom enables IT managers to better understand application behavior across multi-tenancy environments, and across hybrid data centers. Customers can now discover application flow, map it topologically, and track application behavior across disparate systems, storage devices, and internal networks within and across the enterprise.

With these capabilities, customers can align application performance over underlying infrastructure with business level requirements (such as availability and performance levels); reduce management complexity; streamline troubleshooting; and better understand capacity needs and tune systems to address those needs – while saving money by not having to overprovision systems to ensure that enough processing headroom is available to execute workloads within required service level parameters.

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What we like most about this product offering is that it combines infrastructure and application performance management into a cohesive solution for managing workflows. Previous generation infrastructure management tools provided insight into infrastructure behavior only on individual infrastructure components. Previous generation application performance management tools focused on application-level performance and tuning, with little understanding of exactly what was taking place at the underlying infrastructure level. Understanding infrastructure performance from the perspective of the application(s) gives information technology (IT) managers what they really need – a toolset that can accurately track how applications are behaving across disparate underlying infrastructure.

As a result, systems can be properly provisioned, eliminating wasteful overprovisioning; capacity can be properly measured such that enterprises can make more informed decisions on when to add scale or dynamically re-balance resources; the complexity of managing multiple different types of environments can be reduced; and troubleshooting can be greatly simplified.

VirtualWisdom Interface

For the remainder of this report, *Clabby Analytics* takes a closer look at Virtual Instruments' new version of VirtualWisdom. And what we find is a highly automated, cross-platform offering that makes heavy use of machine learning based algorithms to analyze application/infrastructure behavior – leading to greatly improved application performance assurance and faster troubleshooting, while at the same time enabling the enterprise to optimize the return on investment for systems, storage, networks and applications.

The Big Announcement -Application Centricity

Since the introduction of VirtualWisdom, the merger with Load DynamiX, and the acquisition of Xangati, we have seen Virtual Instruments focus on the integration of its three product families – and we have observed the company enhance its systems/storage/network analysis tools; introduce machine learning analytics to simplify deployment and management; improve its visualization facilities such that both IT and line-of-business managers can gauge the impact of application behavior; and add increased granularity to provide fine detail of application and infrastructure behavior.

In December, 2017, however, Virtual Instruments ventured in a new direction with the release of VirtualWisdom 5.4. This new revision of the company's flagship product focuses on combined application/infrastructure performance management, but also places increased emphasis on ensuring that service levels (particularly performance and availability) meet the requirements of line-of-business management.

VirtualWisdom 5.4 extends machine learning analytics and reporting capabilities, as well as adding support for new data sources and additional storage and hyper-converged systems.

Highlights include:

- *Application Discovery* -- Auto-discover and visualize key application services using standard interfaces, including ServiceNow integration, NetFlow analysis, and host integration using SSH or WMI.

- *App-centric SLAs and Alarms* -- the alarm system learns workload patterns and reports out-of-bound conditions. The Investigations capability illustrates the impact of system errors and recommended remediation steps are built into the platform itself, improving application response times, and proactively identifying and resolving noisy-neighbors.

- *Enhanced Reports / Dashboard* -- a summary view of the overall health, performance, and utilization of the entire infrastructure enables quick determination of problem areas and directional trends and is customizable for many IT and business functions, from application owners to storage administrators.

- *New Data Sources* – Integration with new infrastructure devices and third-party platforms, including Gigamon (enabling the visibility of all IP network traffic flows for NAS infrastructure performance monitoring), Cisco (see Page 5 for additional details), NetFlow data, ServiceNow's CMDB, and FCoE metrics.

- *Additional of SMB support* to NAS Performance Probe.

- *Additional support for Software-defined Storage and Hyper-converged systems*, including Dell EMC ScaleIO, vSAN systems, Nutanix, HPE SimpliVity, and more.

- *Storage Port Balancer Analytics* – that identify overloaded storage ports and makes HBA/host move suggestions that rebalance the front-end ports of a Fibre Channel storage array.

VirtualWisdom 5.4 uses highly granular, heterogeneous, *agentless monitoring* to track application behavior – meaning that fewer system cycles are used to monitor and manage infrastructure components. As it monitors infrastructure behavior, it has the ability to ingest and analyze massive amounts of machine and wire data – performing this analysis in a fraction of the time it would take humans to do so (and with more accurate results). It also performs cross-silo correlation using machine learning-based analytics, enabling the behavior of all applications to be tracked regardless of where they reside within a given data center or cloud environment.

Three Basic Elements

To enable application-centricity, there are three basic requirements in an IPM solution. First, the solution must *understand where applications are* – specifically what applications are deployed on which infrastructure services at any point in time. Equally as important, IT managers and administrators must *understand the relative importance of applications and expected service levels* -critical with shared infrastructure. Finally, an application-centric solution must understand *how applications are behaving and how they affect the underlying infrastructure* in order to detect performance issues proactively.

To accomplish these objectives, VirtualWisdom offers three services:

1. Application Service Assurance;
2. Workload and Capacity Optimization; and,
3. Problem Resolution and Avoidance.

Application Service Assurance uses analytics to align infrastructure performance with application performance. Using this service management approach, IT managers, executives and line-of-business managers can view application behavior across underlying infrastructure with easy-to-use dashboards. These dashboards can discover and map application usage across dynamic and virtualized infrastructure, and tiered service level policies can be enabled to ensure optimal performance and SLA adherence on shared infrastructure.

Workload and Capacity Optimization makes heavy use of machine learning analytics to proactively manage workloads and capacity across infrastructure – from the virtual machine to the storage subsystem. This facility also helps proactively detect potential performance issues as well as display optimization opportunities (using seasonal behavior analytics) – thus helping to optimize end-to-end workload placement. Other tools analyze VM data for optimal VM deployment based on capacity and workload behavior and detect overloaded storage ports and support multi-pathing in the event of a link failure.

Problem Resolution and Avoidance is enabled via the use of problem resolution/avoidance analytics to troubleshoot complex performance issues; it offers "investigation runbooks" to provide guided investigations to resolve alarm issues (including chat facilities for cross-team collaboration); it compares anomalies to previous performance scenarios to isolate the cause(s) of problems and thus speed time-to-resolution. Scalable instrumentation enables deep wire and machine data to be collected across the data center in real time for deep visibility into software defined and hyper-converged data centers. Further, it provides high fidelity wire data support for network attached and storage area networks.

The Business Context

Also notable is VirtualWisdom's focus on the "business context" of applications. In most enterprises, application performance problems occur when changes are made to the application and database layers. These changes can affect the way underlying infrastructure behaves, placing unexpected demands on underlying infrastructure that can result in greater demand for resources and sometimes cause performance problems. These performance problems cause performance service levels to decline – aggravating business users by breaking service level agreements. Business managers need to be aware of how their changing requirements may affect information systems performance; and IT executives need to be able to see the impact of change and make modifications to the underlying infrastructure to accommodate business changes.

The new VirtualWisdom 5.4 provides application behavior visibility to both groups. Role-based dashboards enable a customized view that contains information relevant to job role. With an understanding of how applications affect infrastructure, business managers can prioritize applications running across shared infrastructure. For instance, in most cases run-the-business, mission-critical applications need to be given top priority, while less important applications such as mail and messaging need to be assigned access to resources when they are available. With an understanding of the underlying resources available to execute workloads, business managers can then make more informed decisions on their service level requirements – and can align expectations accordingly.
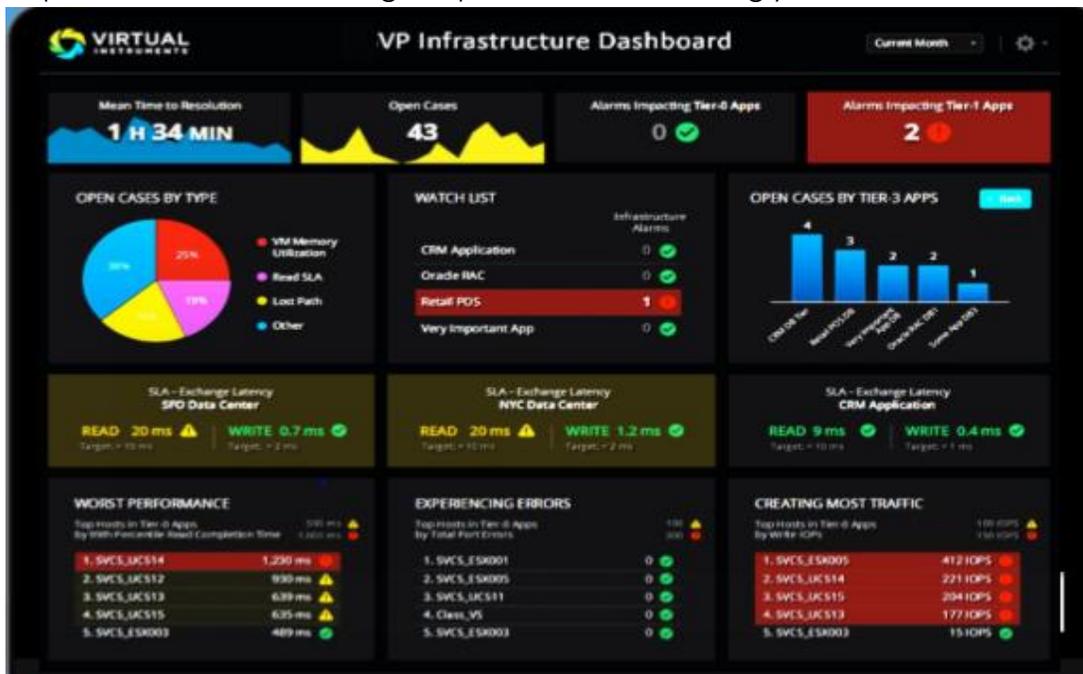
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Cisco Partnership

A strategic partnership with Cisco integrates VirtualWisdom into Cisco's new FC SAN Telemetry Streaming for infrastructure monitoring and analytics, as well as visibility into the application performance, health and utilization of Cisco-based SAN infrastructure. In certain situations, this eliminates the need for hardware performance probes and TAPs. While not providing the depth of visibility of a hardware probe, for some use cases this gives customers a software-only solution that is more flexible, easier to manage, and more cost-effective.

Summary Observations

About seven years ago we identified a subtle shift in the application performance management (APM) marketplace as we noticed vendors starting to integrate analytics into their solutions. Shortly thereafter, we found systems and infrastructure management vendors doing the same – using analytics to sort through log files and wire data to identify root causes of problems and/or to perform predictive analytics. Other vendors used analytics to improve infrastructure performance by troubleshooting problems and developing more efficient workflows.

In late 2017 we became aware that Virtual Instruments was undergoing a major shift in emphasis – becoming focused on "*application-centric*" management – the blending of infrastructure and application performance management to tune and optimize workflows. **We view Virtual Instruments as being on the forefront of this trend**. And customers are responding, with VI reporting new customer growth of 173%, and 2017 revenues up 25% over 2016.

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It is important to note that with a comprehensive view of application behaviors and underlying resources, enterprises will have new insight into available capacity and how it is used. Lower priority workloads can be rescheduled to run during off-peak hours. A shortage of capacity might signal the need to add additional resource scale – and VirtualWisdom tools will show enterprises when and why this needs to occur in both real-time and from a historical perspective.

With its new application-centric view, enterprises can make more informed decisions on system capacity and usage; on the need to rebalance resources or add scale; on the sources of application degradation (and can react with tools that can help troubleshoot problems or prevent problems before they occur); on service level expectations – and much more. This type of workload/application management can be done across heterogeneous systems and storage, across diverse architectures such as converged systems and hybrid data centers.

In the end, enterprises that use VirtualWisdom will run more efficiently – and this improvement in efficiency should improve utilization rates, resulting in <u>major cost savings in infrastructure hardware and software as well as management</u>. Further, by managing workflows at the application layer, service level response times can also be expected to noticeably improve.