Hybrid IT Infrastructure Management

Platform Overview
Overview

VirtualWisdom App-centric Infrastructure Management is an agentless out-of-band IT infrastructure monitoring and AIOps platform spanning from the on-premise data center to the public cloud. Used by IT leaders across every industry, VirtualWisdom ensures the performance, health and utilization of the increasingly complex hybrid infrastructure that supports your most important applications.

Outages, slowdowns and the formation of IT war rooms are symptoms of an out-of-control infrastructure that lacks the instrumentation and monitoring to proactively prevent such problems. A lack of holistic real-time visibility and application awareness across the infrastructure is the root cause of such symptoms. It results in unplanned outages, massively over-provisioned infrastructure, and poor business agility – all of which can have a significant impact on your bottom line.

In modern, hybrid datacenters where monitoring policies and application needs tend to diverge, it is critical to have monitoring policies applied to each infrastructure service based on an understanding of all application services and service level agreements (SLA). Only an application-centric approach to infrastructure management can properly address these challenges.
VirtualWisdom combines and correlates both wire and machine data, collected from the compute, network and storage (software defined, hyper-converged, SAN and NAS) components of infrastructure. These statistics are then fed through the WisdomAI platform to enable application service assurance, predictive capacity management, workload infrastructure balancing, and problem resolution and avoidance. These insights are then surfaced through highly customizable dashboards with content and visualizations optimized for each level of your organization from the administrator and operations manager to the C-level executive.

**Business Drivers for VirtualWisdom**

*App-centric IPM*

Infrastructure is expensive, costly to maintain, and often difficult to scale. Larger IT organizations are now supporting thousands of application services over a shared infrastructure, with thousands of infrastructure services. While transitioning to virtualized and cloud environments can reduce capital expenditures (CAPEX) on physical hardware, the challenges of visibility into the health, utilization, and performance of this dynamic infrastructure remains a tremendous people-intensive process.

Enterprise IT doesn’t have a uniform basis for understanding how the underlying infrastructure is performing. They are challenged to correlate disparate metrics across a heterogeneous data center that constantly changes. What is needed is a vendor-agnostic purpose-built solution that adapts and scales to this constant state of change and complexity—one that provides definitive answers to the most complex infrastructure questions in the context of your business-critical applications.

VirtualWisdom seamlessly brings all this disparate data together—correlating and analyzing it in real time—to provide an authoritative understanding of performance, health, and utilization. The actionable insight that VirtualWisdom provides to both infrastructure and application teams—from executive to specialist—enables them to cost-optimize utilization and assign performance-based guarantees to their mission-critical applications, regardless of whether they are operating in physical, virtual, or hybrid cloud computing environments.

With VirtualWisdom deployed, your revenues are protected from slowdowns and outages. Unnecessary over-provisioning is eliminated, troubleshooting times are reduced by up to 90%, and perhaps most importantly, new application roll-outs to drive new business opportunities are dramatically accelerated.

**The Industry’s Premier Hybrid Infrastructure Management Platform**

The powerful AI-driven analytics and intuitive user interface (UI) deliver application-aware, entity-centric, real-time visualizations of thousands of metrics across the physical, virtual and cloud data center. VirtualWisdom is the industry’s first true real-time hybrid
infrastructure monitoring solution that delivers comprehensive visibility into your multi-tiered application infrastructure environment—a platform that understands how the infrastructure is performing for all your critical applications. It knows which application services are running on which infrastructure components, as well as the relative importance of each application and how those applications are stressing the infrastructure.

While Application Performance Monitoring (APM) tools are becoming popular to monitor tier 0 business-critical applications, budget limitations typically prevent them from being instrumented for more than 15% of the your business-critical applications. To compound this problem, most APM tools have no visibility to the underlying shared infrastructure like SAN fabrics and shared storage. How do you resolve issues created when one of the 85% or less business-critical applications, using the same shared infrastructure impacts the SLA of your tier 0 application? While APM tools can tell you there is a problem in the infrastructure, they can't identify root cause. VirtualWisdom complements existing APM tools by providing visibility from the compute layer down to the storage LUN or file system. Using cross domain correlation, VirtualWisdom can help you identify that rogue application which was impacting your tier 0 business critical application, so you can deliver on your SLAs.
VirtualWisdom Infrastructure Advisors deliver immense value in four key areas

**Application Service Assurance**

VirtualWisdom analytics and dashboards empower you to proactively assure the performance and health of the infrastructure that runs your mission-critical applications. The platform will ensure your hybrid infrastructure will deliver the services required by each of your applications.

Analytics such as the Seasonal Trend behavior analytic observes “normal” behavior, leverages machine-learning, and alerts you with alarms when there is a deviation from the normal patterns.

Application and Infrastructure discovery and mapping aligns infrastructure monitoring with your applications. This discovery can be done natively using SSH/WMI, by integrating with the ServiceNow Change Management Database (CMDB), by integrating with existing Application Performance Monitoring tools like AppDynamics and Dynatrace, or done by collecting NetFlow, sFlow and IPFIX from IP routers, switches and from the VMware vSphere Distributed Switch. It enables you to visualize your infrastructure topology in the context of the application and see all potential issues across the infrastructure.

![Financial App Dashboard](image-url)
Predictive Capacity Management

VirtualWisdom gives you the ability to forecast capacity consumption for compute, network and storage using predictive analytics. You can eliminate surprises and forecast time-to-zero capacity using both short-term and long-term forecasting to avoid reaching capacity limits on your production infrastructure whether it be host ports, switch ports or storage ports. Custom analytics like the Virtual Machine (VM) vacancy analytic use machine learning to ensure the optimal placement of a new Virtual Machine in your virtualized compute infrastructure.
**Workload Infrastructure Balancing**
Optimal application performance and utilization is realized by continuous rebalancing of the underlying infrastructure including VMs, network paths and storage load distribution. Custom analytics like VM Coordinator use machine learning to learn your VM workload patterns, then recommend the optimal placement of these VMs in your VMware ESX cluster to proactively avoid memory or CPU contention. The Storage Port Balancer analytic also uses machine learning to monitor port utilization on storage ports and provide recommendations on rebalancing ports on the storage array. VirtualWisdom users typically reduce their infrastructure costs by 30-50% after deployment by avoiding unnecessary infrastructure spending.

**Problem Resolution and Avoidance**
VirtualWisdom is the gold standard for infrastructure troubleshooting and for preventing business-impacting outages and slowdowns. The platform enables you to quickly identify root-cause before application users and your business are affected.

Purpose-built analytics like Event Advisor leverage machine learning for anomaly detection and root-cause analysis. The Trend Matcher analytic analyzes trends and intelligently pattern-match across all infrastructure domains using topology-based correlation.
Integrated case management and run-book based investigations reduce alarms and speed problem resolution by embedding over 10 years of best practices into the platform. VirtualWisdom customers typically reduce their MTTR (Mean Time To Resolution) times up to 90%. VirtualWisdom provides an intuitive single pane of glass to compare application and host performance whether it be virtual, physical or hyperconverged infrastructure from the datacenter to the cloud.

VirtualWisdom Platform Components

**WisdomPack for enterprise compute**

The WisdomPack for enterprise compute module includes agentless software integration for Host OS monitoring and integration for monitoring VMware vCenter®, Microsoft Hyper-V®, IBM PowerVM®. The data collection of many dozens of metrics enables optimizations across all leading virtual server infrastructures.

**WisdomPack for storage area networks**

The WisdomPack for storage area networks module monitors network infrastructure across the enterprise data center. It includes agentless wire level software-only monitoring of 32G Fibre channel Cisco SANs when Cisco SAN Telemetry Streaming is enabled on the Cisco MDS devices. It also includes agentless software only monitoring of both Cisco and Brocade Fibre channel SAN fabrics.
Optional hardware performance probes that enable real-time wire data collection are also available for Fiber Channel, iSCSI, NFS, or SMB or SAN or NAS deployments. Finally, the module also includes application discovery using NetFlow, sFlow, IPFIX in TCP/IP networks.

**WisdomPack for cloud compute**

The WisdomPack for cloud compute module is an agentless software integration for Host OS monitoring of compute infrastructure within Microsoft Azure and Amazon Web Services (AWS) public cloud environments. The module obtains statistics related to CPU, memory, network and disk usage.

**WisdomPack for enterprise storage**

The WisdomPack for enterprise storage module includes agentless software integration for enterprise storage array monitoring including NetApp, IBM SAN Volume Controller (SVC), Dell EMC VMAX/PowerMax, Dell EMC VxFlex OS hyperconverged system (previously ScaleIO), and VMware vSAN. It monitors the performance, health and capacity of the arrays and enables the reclamation of unused capacity.

**WisdomPack for storage wire data**

The Virtual Instruments family of hardware-based SAN and NAS Performance Probes are the most advanced, high capacity line-rate data inspection and analysis devices available. They inspect, process and analyze every frame and packet header in real-time. They capture the true, unaltered I/O profile of the actual application traffic, detecting application performance slowdowns and transmission errors by measuring every I/O transaction from start to finish.

The SAN Performance Probe family consists of (16Gb) 12 and 24-port models. The Ethernet storage focused ProbeNAS is a (10Gb) 16-port device and supports both NFSv3, SMB v2/v3 and iSCSI protocols. This product family delivers the full range of cost and density options customers require.
TAPs and Ecosystem integration with Packet Brokers

Traffic Access Points (TAPs) available from Virtual Instruments provide a passive, failsafe access point to Fibre Channel, SMB, NFS and iSCSI traffic. This makes the light available for real-time performance monitoring, deep problem diagnosis and protocol layer analysis. TAPs are non-powered, non-mechanical devices that reflect a small portion of the signal through the TAP to another port, which provides a copy of the light to upstream, out of band probes. The passive TAP does not introduce any latency or overhead, has no impact on application or SAN/NAS performance, and is integrated with several industry leading Patch Panel Systems for simple deployment. Virtual Instruments also supports a range of packet brokers from ecosystem partners listed below.

VirtualWisdom Services Save You Time & Money

Virtual Instruments offers a variety of services that help customers augment their existing IT staff with highly trained infrastructure performance management specialists.

Deployment Options

Silver, Gold, Platinum

Our deployment options provide VI Professional Services expertise for maximum productivity and fastest time-to-value.

Silver deployment

- Configure your solution
- Ensure data collection
- Train your staff in basic product use
Gold deployment

• All the services provided in our Silver deployment
• Help to set up your solution to proactively manage your infrastructure

Platinum deployment

• Our most comprehensive installation, configuration and training package.
• Install and configure your solution
• Perform a baseline assessment
• Provide 3 months of follow up assistance.

Infrastructure Performance Assessment (IPA) Service

The IPA service includes delivery of best practices, baseline reporting, advanced analysis and alert investigation. In many cases, this service is delivered in direct support of large-scale migration and consolidation projects. This service can be delivered as a stand-alone solution that is inclusive of a dedicated, targeted deployment of the VirtualWisdom Platform, or as auxiliary services in a currently installed account.

Virtual Instruments Managed Service (VIMS)

Managed Services deliver monthly health, utilization and performance reports, track progress against key KPIs and help customers proactively manage their VirtualWisdom environments. They are focused on improving the performance and availability of customers’ mission-critical applications by augmenting their existing staff.

Storage Performance Validation and Testing Service

The Storage Performance Validation and Testing Service delivers a custom report detailing and comparing the performance of different storage systems and configurations, to enable more intelligent purchase and deployment decisions.

Cloud Migration Readiness (CMR) Service

Virtual Instruments’ Cloud Migration Readiness (CMR) service provides the answers to your key questions while planning cloud migrations. It answers your questions such as: How do you know which workloads to migrate and which to retain in the data center? How do you choose the best cloud service providers for your applications? How do you determine if migrated workloads are performing adequately and what can you do if they aren’t?

Summary

Legacy approaches to assuring the performance, health and utilization of the IT infrastructure are leading to unplanned outages and slowdowns, excess infrastructure spending, and inhibiting the business’ ability to respond to changing market conditions.

The VirtualWisdom IT infrastructure monitoring and AIOps platform is the only application-aware solution that can non-intrusively optimize the performance and availability of applications by measuring, correlating and analyzing actual workload behavior across your private and public cloud infrastructure.
Summary of VirtualWisdom
Product Specifications

- Executive dashboards for seamless communication from the C-suite to the operations teams
- Application-centric view across your infrastructure from compute down to storage
- Fidelity of measurement – observe each application conversation in micro-seconds
- Purpose-built analytics to break down infrastructure silos, run book automation to root-cause

### Application Service Assurance

<table>
<thead>
<tr>
<th>Value proposition</th>
<th>Proactive application and infrastructure dashboard to continuously optimize and rebalance your workload infrastructure</th>
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<tbody>
<tr>
<td>Seasonal Trend Analyzer</td>
<td>Observes normal behavior and alerts you to deviations from the normal</td>
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<tr>
<td>Application discovery</td>
<td>Integrations with APM (AppDynamics, Dynatrace) to map application architecture to infrastructure, native discovery (SSH/WMI), discovery using ServiceNow CMDB, NetFlow (from IP routers and from VMware vSphere Distributed Switch)</td>
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### Predictive Capacity Management

<table>
<thead>
<tr>
<th>Value proposition</th>
<th>Visibility into capacity management.</th>
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<tbody>
<tr>
<td>Capacity forecast analytic</td>
<td>Forecasts time to zero for infrastructure, including virtual infrastructure (VMs), host ports, switch ports and storage ports</td>
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<tr>
<td>VM vacancy analytic</td>
<td>Optimal placement of a new VM using machine learning</td>
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### Workload Infrastructure Balancing

<table>
<thead>
<tr>
<th>Value proposition</th>
<th>Optimal application performance by continuous rebalancing of underlying infrastructure including VMs, network paths, storage load distribution</th>
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<tbody>
<tr>
<td>VM Coordinator</td>
<td>Purpose-built analytic leveraging machine learning to recommend optimal placements of VMs in your ESX cluster to avoid memory or CPU contention</td>
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<tr>
<td>Storage Port Balancer</td>
<td>Purpose built analytic leveraging machine learning to recommend rebalancing of ports on a storage array</td>
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## Problem Resolution & Avoidance

<table>
<thead>
<tr>
<th>Value proposition</th>
<th>Root-cause before business impact. Purpose-built analytics, expert runbooks to accelerate and automate problem resolution and remediation</th>
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<tbody>
<tr>
<td>Event Advisor</td>
<td>Purpose built analytic leveraging machine learning for anomaly detection and root-cause analysis</td>
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<tr>
<td>Trend Matcher</td>
<td>Purpose-built analytic to analyze trends and intelligently pattern-match across domains using topology-based correlation</td>
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<tr>
<td>Investigations</td>
<td>Reduced alarms through case management and a run-book style approach to root-cause using investigations that embed 10+ years of best practices</td>
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### Infrastructure supported

<table>
<thead>
<tr>
<th>Compute</th>
<th>Agentless software integration for Host OS monitoring, software integration for VMware vCenter, Microsoft Hyper-V, IBM PowerVM</th>
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<tbody>
<tr>
<td>FC Network</td>
<td>Agentless wire level software-only monitoring of Cisco SAN when Cisco SAN Telemetry Streaming is enabled. Agentless software only monitoring of Fibre channel SAN fabric (Brocade, Cisco)</td>
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<tr>
<td></td>
<td>Hardware performance probes for Fibre Channel (FC) for wire level real-time monitoring of server application conversations.</td>
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<tr>
<td></td>
<td>• ProbeFC-16G-12, 12 ports, 16Gb Fibre channel</td>
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<td></td>
<td>• ProbeFC-16G-24, 24 ports, 16Gb Fibre channel</td>
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<td></td>
<td>Hardware performance probes for Ethernet storage using NFS, SMB or iSCSI protocols</td>
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<tr>
<td></td>
<td>• ProbeNAS 16 ports, 10 GbE</td>
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<tr>
<td>IP Network</td>
<td>NetFlow, sFlow, IPFIX</td>
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<tr>
<td>Storage</td>
<td>Agentless software integration for enterprise storage including NetApp, IBM SAN Volume Controller (SVC), Dell EMC VMAX/PowerMax</td>
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<tr>
<td>Hyper-Converged (HCI)</td>
<td>VMware vSAN, Dell EMC VxFlex</td>
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<tr>
<td>Cloud</td>
<td>Agentless software integration for Host OS monitoring of compute on Microsoft Azure and Amazon Web Services (AWS). Statistics obtained around CPU, memory, network, disk usage</td>
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