

## Benefits

- Identified causes of potential slow-downs definitively and provided corrective action
- Proved the VirtualWisdom ability to accurately monitor, analyze and optimize performance in real-time, with no impact to application hosts
- Eliminated guesswork by leveraging quantitative modeling and proved the need for additional capacity

## Business Impact

- According to manufacturing industry analysts, severe IT performance problems, or downtime, could easily exceed \$21K per minute, in tangible and intangible costs

## Utilizing VirtualWisdom ProbeNAS to solve NFS performance problems

### Company Background

This diversified global manufacturing company provides solutions to customers by bringing technology and engineering together in the industrial, commercial and consumer market around the world. The Company operates through four segments: Process Management, Industrial Automation, Climate Technologies and Commercial & Residential Solutions, with annual revenues exceeding \$20 billion.

### Environment Overview

This division has two core business platforms — Automation Solutions and Commercial & Residential Solutions, to help customers confront the challenges of an increasingly complex and unpredictable marketplace from a position of strength. A complex business application suite is core to running the business, end-to-end. It depends on block-based Oracle apps running on IBM SSD-based arrays, as well as NetApp file-based (NFS) apps working together. The NFS platforms are NetApp FAS systems, often called filers.

### IT Challenges

A NetApp filer system exhibited performance problems and due to the criticality of the mission critical (MC) application, the customer had to solve them. Specifically, when they created a large number of files on their filer, it would impact the application running on the block FC array. The short-term workaround was to delete files, then recreate them.

### IT Challenges

The Company is a long-time, highly-satisfied customer of Virtana for SAN infrastructure monitoring. Through the years, Virtana has been able to help the Company tune their systems to optimize performance, availability, and significantly, cost. So, Virtana was a natural fit for the NAS / NFS investigation. Virtana was brought in to do an Infrastructure Performance Assessment (IPA). IPAs are specifically designed to test the health,

utilization, and performance of critical IT infrastructures. VirtualWisdom and the NAS Performance Probe were used by the Professional Services team to baseline existing performance on their existing filer, then again on their new filer, to provide delta reports. Once the Virtana Professional Services team completed the IPA instrumentation, the team spent a little under two weeks to do the research and analysis on two filers, and made recommendations. Filer #1 supported other apps; while filer #2 was running the dedicated app. Virtana partnered with Sirius Solutions, whose customer relationship and keen understanding of the Company's IT environment was key to the success of the investigation and solution.

In the following graphs, read and write latencies of filer 1 were only kept relatively flat by removing files. Filer 2 supported many more files while keeping latencies at or below the figures for filer 1.

### Virtana Solution Benefits

Virtana's VirtualWisdom infrastructure performance management products and services provide comprehensive, real-time instrumentation and measurement that allowed the Company's IT managers to identify the causes of workload performance problems.



Comparison of 2 metrics for MC application running on Filer 1 and Filer 2

### Results

The Virtana team provided the first empirical NAS-to-FC protocol correlation to show the NAS filer impacting the FC environment. As we learned, some hosts were driving both FC/SAN and NAS workloads.

The test provided evidence of the need for a 2nd filer, dedicated to the MC app. Performance problems were attributed to the scale of files and impact of daily clean up processes. Filer 1 was running multiple applications, and the performance for the MC application limited the number of files that could be created before they had to be removed. When the same workload was run on filer 2, which was dedicated to this app, the number of files could be significantly increased before they needed to be removed.

Specifically, they saw these benefits from the IPA service:

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Going forward, the company is looking at how they can leverage VirtualWisdom in other groups, to optimize other major environments.

## Summary

The Company considers Virtana products and professional services as an essential part of their overall data center optimization strategy. Beyond just providing the most stable possible platform for their current business-critical applications, they want to make informed decisions on making future major platform moves. They are using VirtualWisdom to not only optimize health, utilization and performance of resources, but also to make sure they are being responsible financially. The Company was so pleased with the IPA service that they purchased a NAS Performance Probe to complement their existing FC SAN based monitoring.

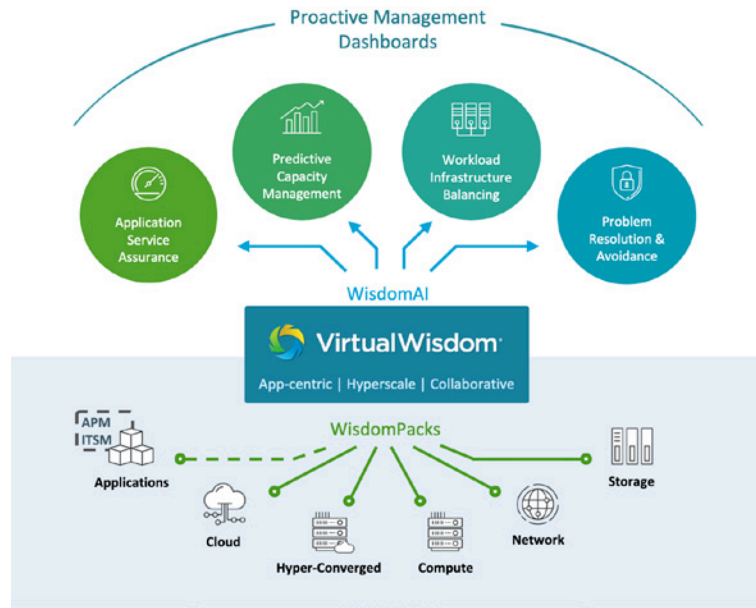


Figure 2: Virtana Adds Precision Infrastructure Knowledge



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**Virtana**  
2331 Zanker Road  
San Jose, CA 95131  
Phone: +1.408.579.4000