

Infrastructure Performance Analytics (IPA): Converged Infrastructure

Introduction

Current business needs cannot be met with yesterday's technology. Legacy IT architecture perpetuates silos and complexity through an overload of products and tools that lack interoperability. Converged infrastructure meets the need by bringing storage, servers, networking, and management together. The result is simplified, yet powerful IT that is energy and space efficient, less expensive to operate, and aligns to meet the needs of the business for any workload. Virtual Instruments, the leader in Infrastructure Performance Analytics (IPA) is the performance monitoring choice for organizations adopting converged infrastructure.

Virtual Instruments Infrastructure Performance Analytics (IPA) platform, Virtual Wisdom[®], was built from the ground up to unify the monitoring of dynamic converged infrastructures and traditional data center resources. VirtualWisdom adds a builtin diagnostic layer into the converged infrastructure that collects, computes, and tracks metrics to provide both real-time monitoring and historical trend analysis of overall performance, availability, and utilization.

What Is Converged Infrastructure?

A converged infrastructure is a pre-tested/configured combination of physical compute, networking, and storage resources into a single, optimized IT solution. The management layer of each component is integrated in to a single management user interface to simplify the management process. There are various terms, such as "unified computing" or "converged systems" that can be used to describe converged infrastructure. Some solutions are built on scale-up architectures that scale by adding fixed integrated "pods" while others "scale out" by providing the flexibility to add each component independently. A number of technology vendors such as EMC, HP, Cisco, and IBM have developed their own converged infrastructure offerings.

What Are the Benefits of Convergence?

Pre-tested Configurations

Open Systems integration has become a very daunting task for many IT organizations. Before an open system is placed in production it must undergo extensive interoperability testing to ensure that it will perform as expected. Determining which HBA, FC switches, and firmware level is supported by a given OS can be a full-time job. However, if a new OS or HBA patch is released three months later, the IT organization must undergo interoperability testing all over again. Converged infrastructure addresses this problem because the manufacturer performs all the testing for the entire converged stack.

Increased Agility

Because converged systems arrive fully tested and integrated, they can be deployed into production with greater speed and agility than open systems. This can dramatically streamline the process of deploying new infrastructure and applications.

Single Point of Contact

Even though the infrastructure (converged or otherwise) undergoes significant integration testing before being deployed in production, things can still go wrong. When something does go wrong in open systems environments, most IT organizations experience the endless finger-pointing. The HBA vendor blames the storage network, the server OS vendor blames the storage array and no one is actually fixing the problem. Converged infrastructure providers attempt to address this issue by providing one number to call, one support organization to talk to, one throat to choke, and no finger pointing.

Convergence Adoption Challenges

There are many benefits for converged infrastructure such as proven design and speed of deployment; however, there are some drawbacks that may undermine your converged system strategy if they are not addressed.

Performance Uncertainty

Many times application owners express concerns that moving their application into a converged infrastructure will affect overall performance and integrity of their applications; especially if the existing non-converged application infrastructure is performing adequately in the eyes of the application owners.

Lack of Shared Resource Visibility

With most converged infrastructure solutions, there is only one shared pool of resources for each “pod”. This can be disconcerting for application owners who are worried that someone else’s application will starve theirs for resources. Even with QoS policies in place, the lack of shared resource visibility can be problematic for problem identification/avoidance.

Limited Management Integration

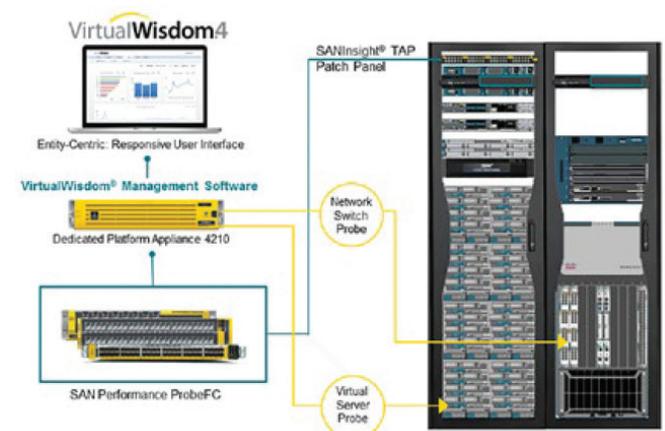
Although most CI’s develop proprietary, unified management interfaces to manage the converged stack, they still have to use legacy tools to manage their existing non-converged open systems environment. Furthermore, the unified management solutions often provide little to no correlation, reporting, or advance analytics across all of the server, network, and storage resources that make up the converged solution. While it may save you the time of switching between different management consoles, they do not typically do a good job of providing contextual integration.

Vendor Lock-In

In order to realize the benefits listed above, most converged offerings have strict configuration guidelines that must be observed. If you need to add a server, switch ports, or storage for your system to scale, you have zero choice from a vendor aspect and must buy from the same manufacturer to remain in compliance with the specification.

VirtualWisdom® IPA Overview

The VirtualWisdom Platform is composed of a fully integrated combination of VirtualWisdom Management Software, and a purpose-built Platform Appliance. This powerful combination of hardware and software, all fully developed, integrated and tested in-house at Virtual Instruments, ensures the highest levels of performance, scalability and serviceability.



Reference Architecture

In this sample reference architecture, Virtual Instruments TAP patch panels are inserted in between the Fibre Fabric switches and the storage arrays. TAP patch panels replace standard non-tapped patch panels and provide access to the physical FC protocol layer in a passive nonintrusive way that has no impact on performance or data transmission. The TAP patch panels send a portion of the fiber optic signal to the VirtualWisdom SAN Performance Probe for aggregation by the VirtualWisdom Platform Appliance. The VirtualWisdom Platform leverages a unique combination of software and hardware probes. The VirtualWisdom Platform Appliance persists, correlates and analyzes a breadth and depth of data never before possible—collected from throughout the end-to-end converged infrastructure. This highly accurate and comprehensive solution enables customers to stop reactive troubleshooting, start managing performance, and achieve cost optimization.

VirtualWisdom Benefits:

- **Enables Performance-Based SLA:** VirtualWisdom can baseline and validate existing SLAs and ensure sizing, and SLAs commitments are still maintained once applications are moved into a converged infrastructure. VirtualWisdom provides the ability to ensure that performance meets the needs of the business by facilitating the use of performance based SLAs. This allows more applications to be virtualized and ensures that the capacity of the physical server is used to its maximum potential resulting in reduced OPEX and CAPEX.
- **End-to-end Visibility:** The proactive VirtualWisdom Platform gives you the ability to track and monitor performance from the

application through the converged infrastructure, and to pinpoint and resolve problems before they become serious. This new visibility reduces the risk of infrastructure change and protects critical application performance and investments.

- **Vendor-Agnostic IPA:** Since VirtualWisdom is an agentless, protocol-based Infrastructure Performance Analytics platform, it not only works with several of the major converged systems offerings, but it can also be used to monitor your existing legacy open systems infrastructure. Having a management solution that can baseline current system performance while also tracking and monitoring the new converged deployments, will increase operational efficiency for your IT organization and give you the flexibility to adopt new technologies as needed.

Conclusion

Converged infrastructures may remove many of the burdens and headache associated with open systems integrations and interoperability testing, improving overall agility and efficiency. However, some of its limitations create other challenges that need to be addressed in order to ensure that your converged strategy is successfully adopted for your missioncritical applications. Our IPA platform fully supports converged environments by providing detailed visibility into the performance, utilization, and health of the infrastructure. VirtualWisdom helps customers improve the performance, availability, and cost efficiency of their end-to-end infrastructure; allowing IT professionals to proactively manage performance so that I/O performance does not artificially constrain either the adoption rate or density of converged infrastructure deployments.



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