

Infrastructure Performance Assessment

Features

- Uses VirtualWisdom to measure & analyze infrastructure
- Highly accurate visibility into system-wide infrastructure
- Real-time performance information from the virtual machine to the Storage LUN or NAS File system
- Identifies performance and behavior anomalies and potential trouble spots
- Characterizes existing and potential SAN/NAS and Virtualized infrastructure issues by comparison to best practices
- Heterogeneous and vendor agnostic; provides unbiased view from the virtual machine to the LUN/filesystem to find performance issues
- Analyzes VM, SAN & storage port utilization

Benefits

- Identify over-provisioned links
- Identify failed links and less-than-ideal configurations
- Expose I/O-related performance problems
- Expose physical layer issues
- Discover performance issues before they impact a new application
- Discovery and analysis of emergent problems
- Expose CPU contention and Memory Pressure
- Discover Bully or Zombie virtual machines
- Recommendations for future actions
- ROI validation
- Infrastructure balancing and utilization
- Infrastructure consolidation based on capacity planning
- Application I/O profiling

Customer Challenges

It's difficult to acquire the necessary visibility into the health, utilization and performance of IT infrastructures—and guarantee overall performance and availability to support mission-critical applications. Enabling IT infrastructure agility to normalize operations is crucial for supporting today's mission critical applications. Challenges result from the deployment of multi-featured products and services within a heterogeneous IT infrastructure environment. This challenge is increased by the dynamics caused by a frequently changing infrastructure.

Infrastructure Performance Assessment (IPA)

The IPA is a comprehensive Customer Success Services engagement designed to reveal and provide an assessment of the health, utilization and performance of the end-to-end virtualized host and SAN or NAS environment. We perform a 1 to 2-week non-disruptive, agentless data collection, and analyze the results, to make recommendations to improve the performance, utilization, and availability of your legacy environment BEFORE you migrate or consolidate your data or make other potentially disruptive changes. The cost of this service is returned many-fold by identifying areas to optimize your existing assets and right-size future deployments.

The IPA service is delivered by Virtana's experts – the world most experienced infrastructure performance analysts. The delivery includes best practices, performance, risk and optimization assessments, 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 Virtana account. It is applicable to both physical and highly virtualized or private cloud infrastructures.

Sample Assessments

Value Area	ID	Category	Slide Title	Finding	Business Impact	Recommendation
Utilization	36	Risk	Abnormal Host Write Peaks with Event Advisor	Abnormally high workload in relation to prior workloads on the same host	Application performance maybe impacted by workload spikes	Validate that the additional workload is by design or is an anomaly
Utilization	43	Risk	Abnormal Storage Read Peaks with Event Advisor	Abnormally high workload in relation to prior workloads on the same host	Application performance maybe impacted by workload spikes	Validate that the additional workload is by design or is an anomaly
Utilization	44	Risk	Abnormal Storage Read Peaks with Event Advisor	Abnormally high workload in relation to prior workloads on the same host	Application performance maybe impacted by workload spikes	Validate that the additional workload is by design or is an anomaly
Health	2	Optimization	Environment-wide Inventory: Physical Ports	Only X % of the SAN ports in the environment are used	CapEx opportunities is evident. Under-utilized or unused infrastructure can be retired or consolidated to reduce costs and improve operating efficiency	Measure the performance and utilization of existing devices as new devices are added/ Continue to monitor the HBA multipath and array performance as the environment grows
Health	8	Optimization	Multipath Verification - Minimal/NoTraffic HBAs	There are host with minimal or no traffic	Servers with little to no traffic are valuable assets that could be put to good use elsewhere in the environment	Investigate whether these servers can be reallocated
Health	9	Risk	Array Fabric Balance	There are fabrics that are imbalanced. Fabric A is imbalanced when compared to Fabric B	An imbalanced fabric increases the risk of performance issues.	Fix the various multipathing issues on the servers to better even out the workload
Utilization	48	Risk	vSphere - eSX Host Top	Utilization for all hosts is below X %. Host Y jumped to Z % during the monitoring period	Spikes and/or prolonged periods of high CPU utilization may impact application performance	Monitor host x to ensure it has adequate resources. Continue to monitor CPU and memory demand as the environment grows
Utilization	54	Optimization	VM Rightsizing Exercise	X VMs were identified where the number of CPUs allocated to them might be lowered.	CapEx opportunity exists for increasing the density of VMs	

Figure no.1 shows a list of key findings from the assessment, grouped by Health, Utilization, and Performance, and showing which issues are the most critical, what is their business impact, and what is Virtana's recommendation for remediation.

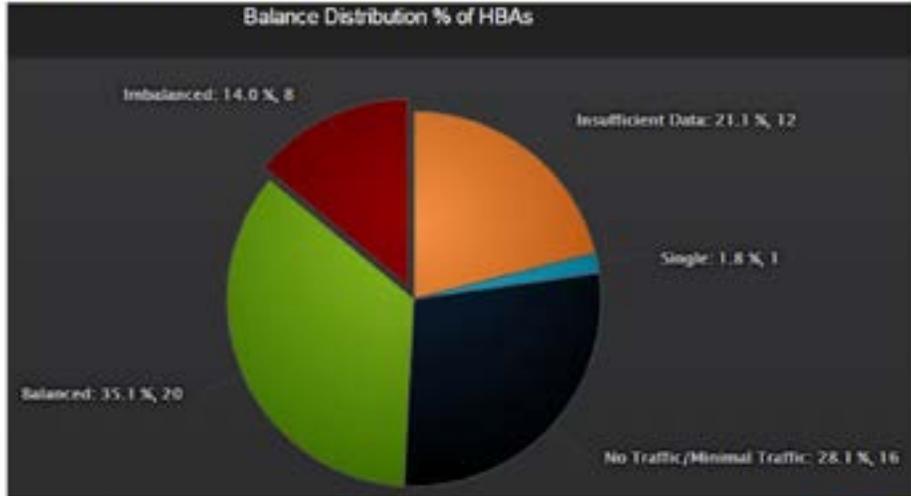
Configuration – Server Load Balance (Multipathing)

Assessment: The Multipath analytics reveals a configuration where 35% of the environment is balanced. Risk is present with 14% of the environment imbalanced.

Virtana Advice: Investigate if imbalanced is by design or if it is due to a multipath software misconfiguration.

Observation: Multipath redundancy is important for any environment where availability is important. The architecture, implementation, configuration and state of the infrastructure should ensure that no single device or component could be a single point of failure. In the event of a hardware failure, there must be a redundant path for the traffic to flow or outages can occur.

This section assesses the current behavior of the Host entity to determine if all paths are online and specifies the mode in which they are operating. It is important to take this analysis and compare it to the design intent of the environment to ensure that the systems are operating as designed.



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Category: Optimization

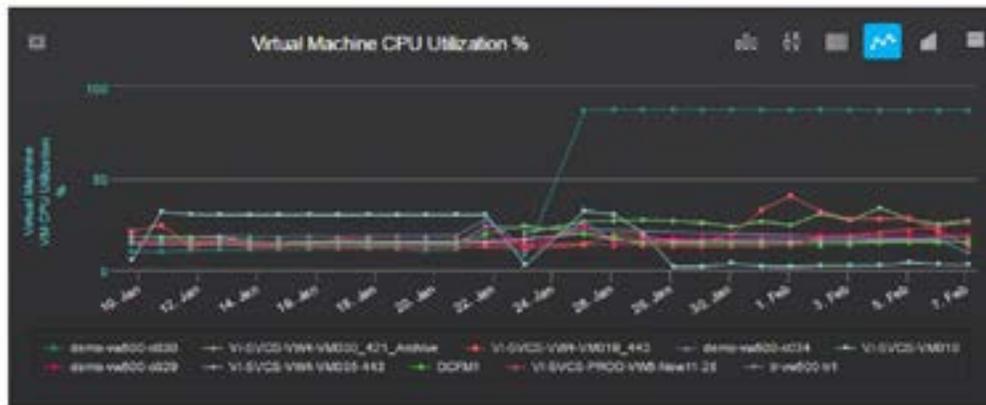
Figure no. 2 shows an example of a Health finding and assessment. In VirtualWisdom, Health consists of configuration, communication and physical layer anomalies, incidents and faults.

vSphere - VM CPU Utilization

Assessment: CPU for Top VMs stay under 30% except for demo-w500-cd30.

Virtana Advice: Continue to monitor application to ensure high level of Utilization and performance as routine changes take place in environment.

Observation: Excessive CPU Utilization may reflect an app requires additional CPU. In order to take advantage of additional vCPU verify that the guest app is multithreaded. It may require better CPU technology not more vCPUs.



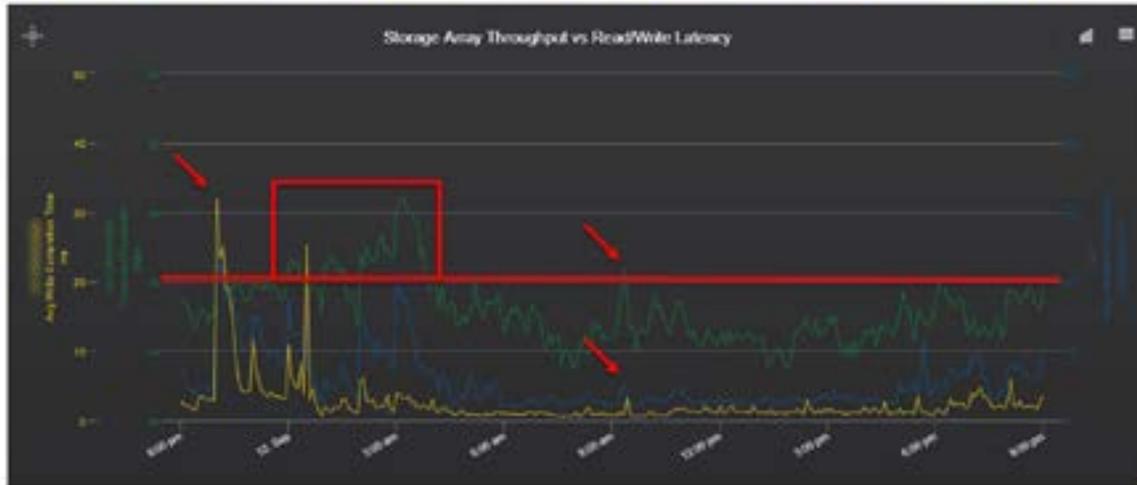
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Category: Risk

Figure no. 3 shows an example of a Utilization finding and assessment. Utilization is a measurement of resource demand, workload and/or consumption from an availability perspective. Utilization is frequently confused with Performance, which is more correctly related to system latency.

Storage Array – Workload vs. Performance

Assessment: Every time the array goes north of 2k MB/s overall throughput, the performance of the array itself jumps dramatically for both reads (~3ms to over 25ms spikes) and writes (~1ms to over 31ms spikes.) This behavior happens daily for this array.
VI Advice: Follow up with vendor on how to improve performance (add cache, spindles, reduce snapshots, move workload off array, etc.)



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Category: Performance

Figure no.4 shows an example of a storage array workload performance finding and assessment. VirtualWisdom is the only platform in the market that provides real-time IO performance measurement, reporting and correlation. IO performance is the measurement (typically in milliseconds) of how long it takes for Disk Read or Write exchanges to complete. From the virtual server perspective, VirtualWisdom measures performance impact to the application by revealing CPU contention or memory pressure levels in oversubscribed hosts.

NAS NFSv3 Storage

Assessment: Around 4:30 PM, latency for NAS storage increases, reaching 15ms/
VI Advice: Configure alarms to ensure SLAs will be maintained at values lower than the established 20ms upper limit.



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Category: Performance

Figure no.5 shows an example of a NFSv3 NAS IO performance finding and assessment. VirtualWisdom is the only platform in the market that provides real-time IO performance measurement, reporting and correlation. IO Performance is the measurement (typically in milliseconds) of how long it takes for Disk Read or Write operations to complete.

Complementary Service – SOS Emergency Services

Virtana can handle your emergency issues and outages by responding immediately and working with you to assess the situation, provide the necessary equipment, and deliver the expert staff and tools required to discover the issues that are affecting your service delivery levels. Virtana Professional Services personnel initially undertake remote assessment of the situation and, if necessary, come to the customer's site to install instrumentation software and hardware for data collection and analysis. These tools are the most advanced monitoring and analysis tools available. Our SOS Emergency Services capabilities include:

- Identifies performance and behavior anomalies and potential trouble spots
- Characterizes existing and potential SAN/NAS and Virtualized infrastructure issues by comparison to best practices
- Heterogeneous and vendor agnostic; provides unbiased view from the virtual machine to the LUN/filesystem to find performance issues
- Quickly identifies any SAN/ NAS or virtual infrastructure performance or availability issues; reduces typical troubleshooting time from weeks and months to hours or days
- Reduces risk by identifying evolving issues before they become real problems
- Immediate results — applications are back online at optimal performance levels
- Protects against revenue loss
- Ensures higher customer satisfaction



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