VIRTUAL INSTRUMENTS

SERVICES BRIEF

Infrastructure Performance Assessment

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 Virtual Instrument'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 Virtual Instruments account. It is applicable to both physical and highly virtualized or private cloud infrastructures.

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

Sample Assessments:

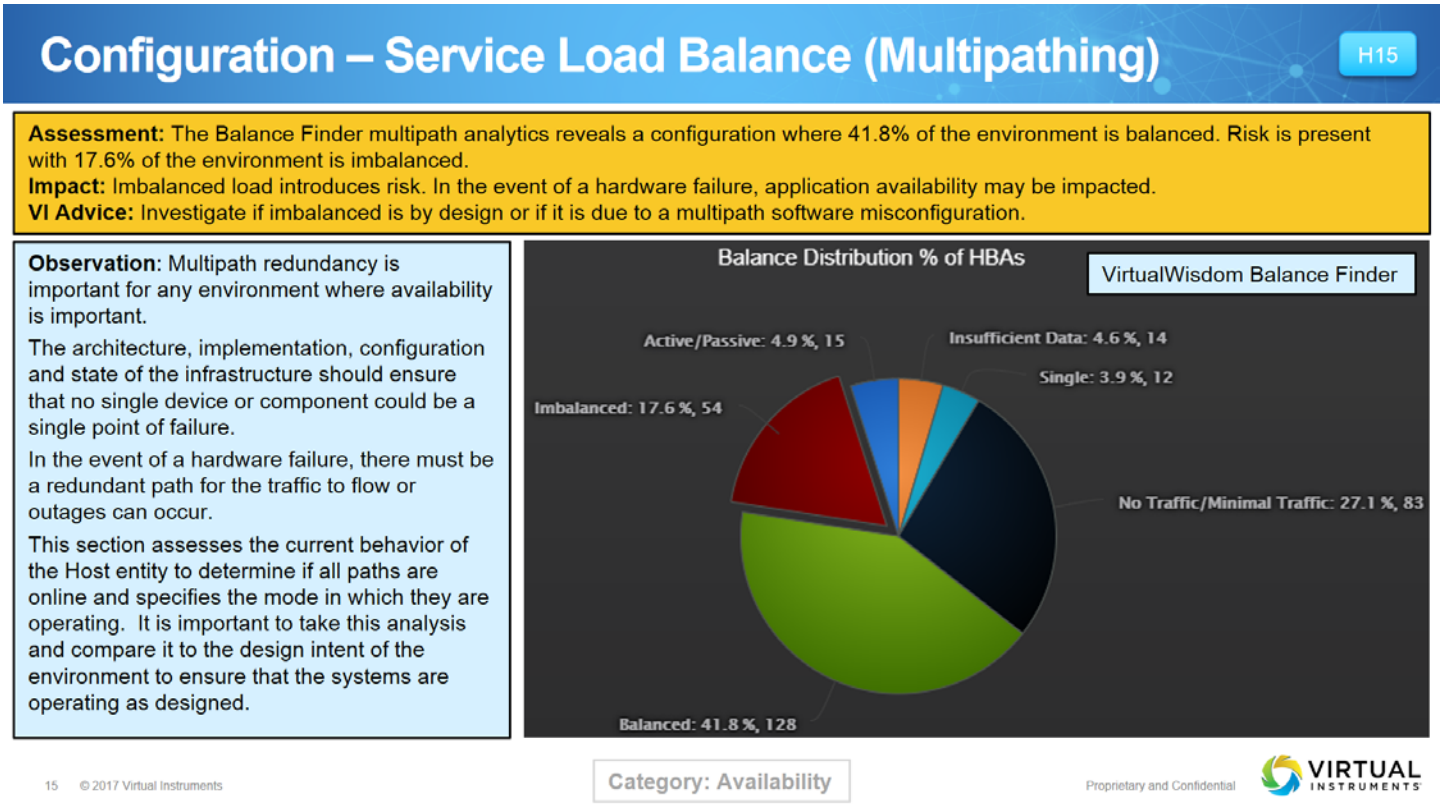

Figure no. 1 shows an example of a Health finding and assessment. In VirtualWisdom, Health consists of configuration, communication and physical layer anomalies, incidents and faults.

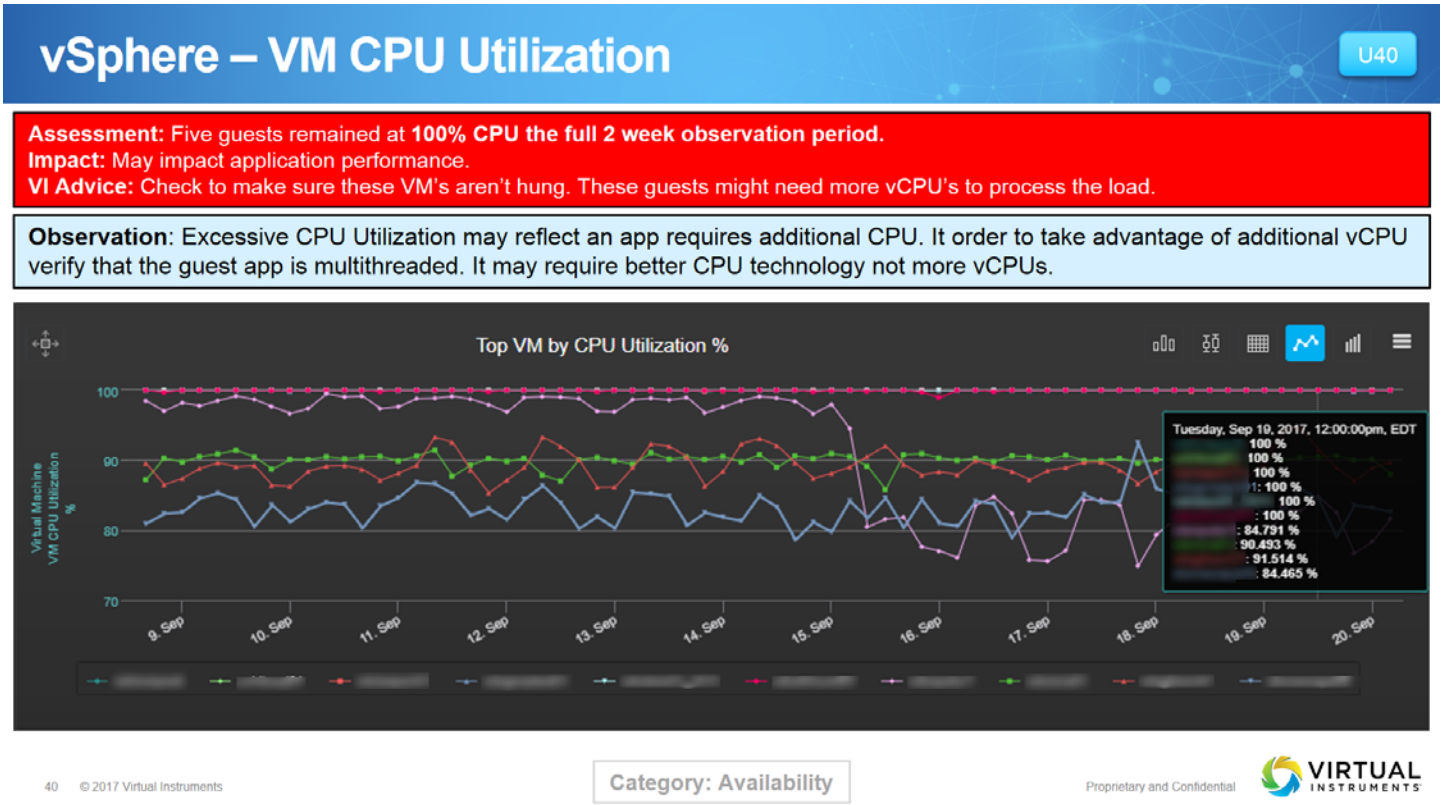

Figure no. 2 shows an example of a Utilization finding and assessment. Utilization is a measurement of resource demand, workload and/or consumption from an availability perspective. Utilization is frequently confused with Performance, which is more correctly related to system latency.

Storage Array – Workload vs. Performance

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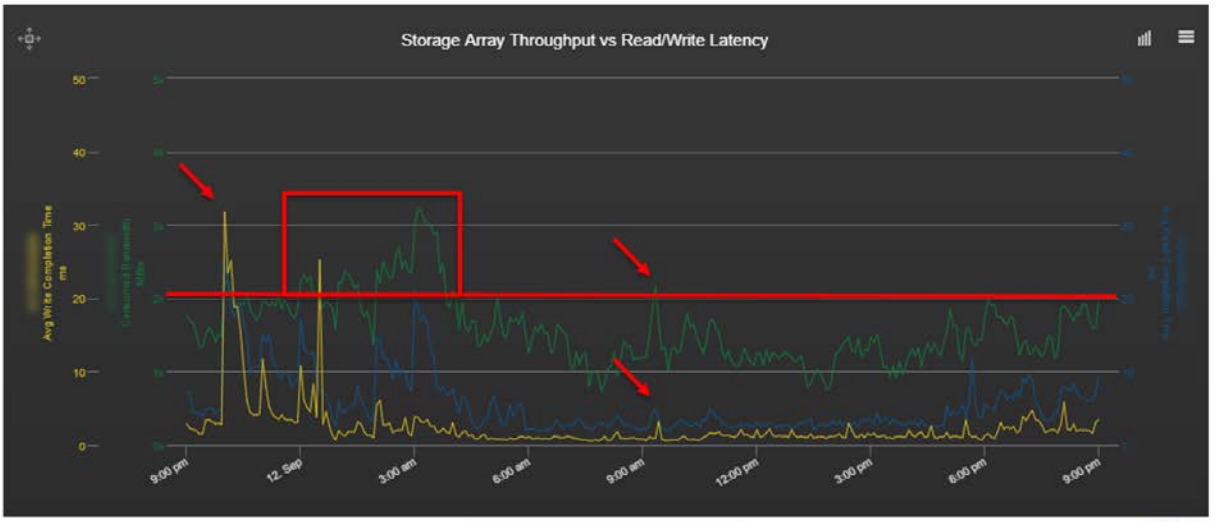
Assessment: Every time the array goes north of 2k MB/s overall throughput, the performance of the array itself jumps dramatically for both reads (~3ms to over 25ms spikes) and writes (~1ms to over 31ms spikes.) This behavior happens daily for this array.
Impact: Application performance may be affected.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



Category: Performance

Figure no.3 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.

NFSv3 NAS Storage

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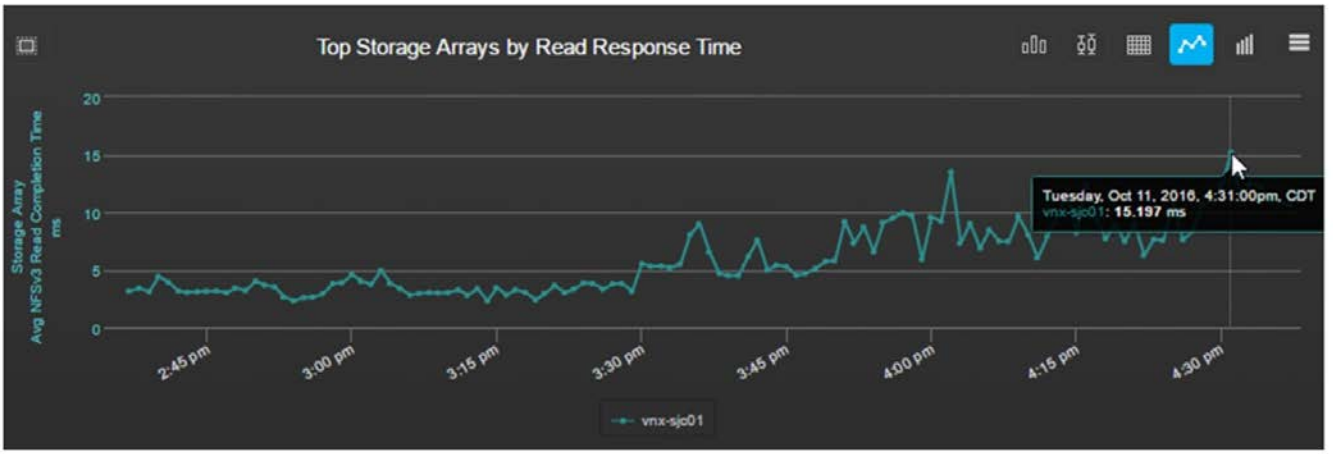
Assessment: Around 4:30 PM, performance for NAS storage increases, reaching 15ms.
VI Advice: Configure alarms to ensure SLAs will be maintained at values lower than the established 20ms upper limit.



Category: Performance

Figure no.4 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.

Hostname	Status	MB/s	Host Port	Switch	Fabric
SVCS_ESX002	Imbalanced	16.237	SVCS_ESX002_1	SVCS_PROD_A_C202:VI-Services_A	VI-Services_A
SVCS_ESX002	Imbalanced	23.558	SVCS_ESX002_2	SVCS_PROD_B_C201:VI-Services_B	VI-Services_B
SVCS_UCS12	Balanced	16.718	SVCS_UCS12_A	SVCS_PROD_A_C202:VI-Services_A	VI-Services_A
SVCS_UCS12	Balanced	16.719	SVCS_UCS12_B	SVCS_PROD_B_C201:VI-Services_B	VI-Services_B
SVCS_UCS16	Imbalanced	30.652	SVCS_UCS16_A	SVCS_PROD_A_C202:VI-Services_A	VI-Services_A
SVCS_UCS16	Imbalanced	0.763	SVCS_UCS16_B	SVCS_PROD_B_C201:VI-Services_B	VI-Services_B
SVCS_ESX004	Balanced	14.799	SVCS_ESX004_1	SVCS_PROD_A_C202:VI-Services_A	VI-Services_A
SVCS_ESX004	Balanced	14.798	SVCS_ESX004_2	SVCS_PROD_B_C201:VI-Services_B	VI-Services_B
SVCS_UCS15	Balanced	13.019	SVCS_UCS15_B	SVCS_PROD_B_C201:VI-Services_B	VI-Services_B
SVCS_UCS15	Balanced	13.02	SVCS_UCS15_A	SVCS_PROD_A_C202:VI-Services_A	VI-Services_A
SVCS_ESX003	Balanced	12.911	SVCS_ESX003_1	SVCS_PROD_A_C202:VI-Services_A	VI-Services_A
SVCS_ESX003	Balanced	12.911	SVCS_ESX003_2	SVCS_PROD_B_C201:VI-Services_B	VI-Services_B
SVCS_UCS13	Balanced	8.464	SVCS_UCS13_A	SVCS_PROD_A_C202:VI-Services_A	VI-Services_A
SVCS_UCS13	Balanced	8.463	SVCS_UCS13_B	SVCS_PROD_B_C201:VI-Services_B	VI-Services_B
SJESXPRD03	Balanced	6.612	SJESXPRD03_VMHBA2	VI-PROD-B300b:VI_Prod_FabB	VI_Prod_FabB
SJESXPRD03	Balanced	6.612	SJESXPRD03_VMHBA3	VI-PROD-B300a:VI_Prod_FabA	VI_Prod_FabA
Training14	Balanced	6.038	Training14_B	SVCS_PROD_B_C201:VI-Services_B	VI-Services_B
Training14	Balanced	6.038	Training14_A	SVCS_PROD_A_C202:VI-Services_A	VI-Services_A

Table no.1 shows a list of all the Hosts or Servers and their associated multipath status. Multipath status is divided into, Balanced, Imbalanced, Active-Passive, Single HBA and no traffic. The list can be filtered by Application, Clusters, Hosts or a custom grouping.

Complementary Service - Capacity Profiling Service

Capacity Profiling, a new Customer Success Service presents data center owners with actionable data to realize substantial savings by deferring future capital expenditures. Savings of millions of dollars can be achieved. The Capacity Profiling Service is designed to empower storage administrators with the most effective storage capacity planning approach based on the correlation of actual LUN IO traffic patterns and LUN configured capacity. Let the VI Services' team provide you with a clear holistic view of the LUN utilization and optimization opportunities for each of your arrays. The Capacity Profiling Service leverages the unique set of real-time data metrics from your VirtualWisdom® installation and the array's LUN configured capacity data provided by the customer. Service features include:

- Plan informed purchasing decisions on future storage
- Reclaim silent or underutilized LUNs saving future capital expenditures
- Expose “Hot” LUNs with associated capacity and performance
- Optimize path configuration for better performance
- Re-tier applications based on LUN utilization and performance by moving less frequently accessed items to a lower (and less costly) tier, while freeing faster (and more expensive) tiers for the critical applications
- Plan informed migrations or consolidations based on actual traffic utilization, expected performance and LUN capacity
- Track storage use by hosts, groups or departments

Complementary Service – SOS Emergency Services

VI 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. Virtual Instruments 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

VIRTUAL INSTRUMENTS

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