# STORAGE SWITZERLAND

# CATCHING ISSUES BEFORE THEY BECOME CAREER LIMITING

Storage Switzerland, LLC

Eric Slack, Senior Analyst

Virtualization administrators have a big job, they're tasked with keeping the VM environment running. This can include a number of areas (but isn't limited to): fixing problems before they impact users, supporting the expected growth of virtual machines, maintaining performance levels during that growth and keeping infrastructure cost in line the whole time. Unfortunately for IT professionals, balancing VMs' resource needs and resource availability with the usual management utilities can be like trying to control a moving train - from the platform.

For the administrators who are out in front of this freight train, a set of comprehensive performance monitoring tools isn't a luxury, it's a requirement. Making poor decisions, or no decisions at all, can be career limiting. These administrators need intelligence, not raw data; recommendations and suggested courses of action not just more information. They need effective tools that can see the entire environment but not overwhelm them with so much information that it obscures the critical metrics.

What

NetApp's OnCommand Insight Balance is a performance and capacity management software solution that enables administrators to optimize resource usage and assure performance of critical VMs. It collects raw data from individual elements in the environment - servers, storage systems, network components and VMs - then automatically maps and analyzes the virtual infrastructure from end to end, without agents. Then it takes this raw data and applies powerful analytics to produce the intelligence needed to understand how resources and application workloads interact and to generate actionable information.

OnCommand Insight Balance produces detailed metrics to maximize performance, speed troubleshooting and manage utilization, from end to end. It enables IT managers and administrators to manage their infrastructure from virtual machines and physical servers, to storage arrays and individual spindles.

Who cares about Performance?

Virtualization is no longer a project being run on test and development servers or restricted to applications that no one really sees. VMware projects are now into later phases of implementation, which means production applications are going onto VMs. These are visible all the way up to the executive offices. You can't hide poor performance of a critical application; people care, somebody will come looking. Virtualization administrators have to get on top of their performance issues. The question is: "where to start?".
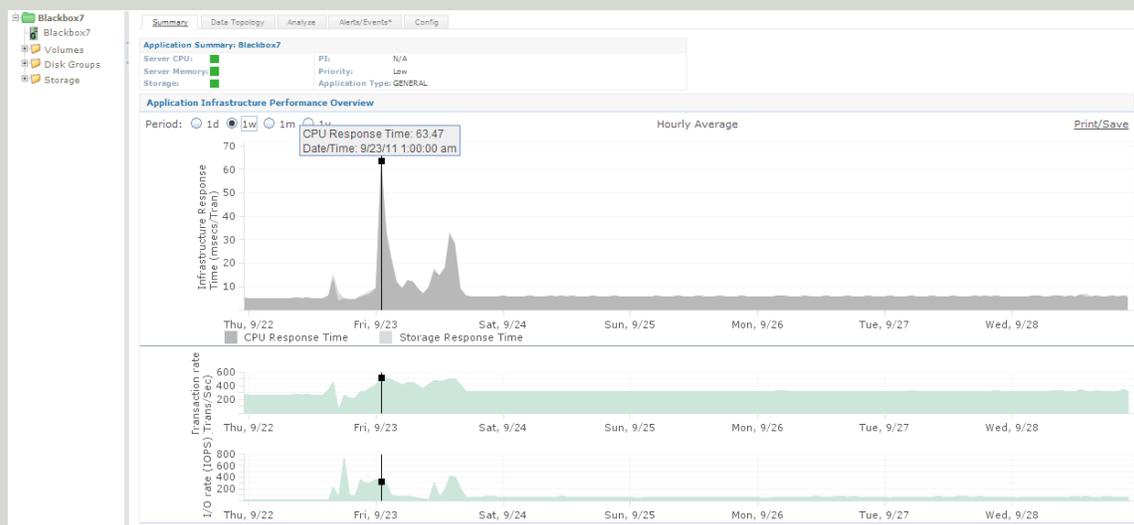
IT Infrastructure Key Performance Indicators

OnCommand Insight Balance provides information on critical aspects of a shared infrastructure that can help you pinpoint problems and often prevent them. Balance creates Key Performance Indicators for the IT department to assess and manage their shared infrastructure against, including Infrastructure Response Time, Performance Index and Disk Utilization.

The Performance Index (PI) is a value calculated for each host based on CPU, Memory and Storage, the three resources that most impact performance. A PI value of 100 is an optimal point or a baseline, indicating a host is running at near-perfect efficiency. A host with values below 100 indicates it's underutilized and can support more workloads. A PI value above 100 means the host is overworked and should have some VMs removed or more resources added, such as more memory or better-performing storage.

Using the Performance Index enables the virtualization team to know where best to put new VMs in advance, by seeing which hosts are below their optimal loading value. They can also see which hosts are overworked and represent a problem in the making, even before current applications start slowing down and complaints come in from users.
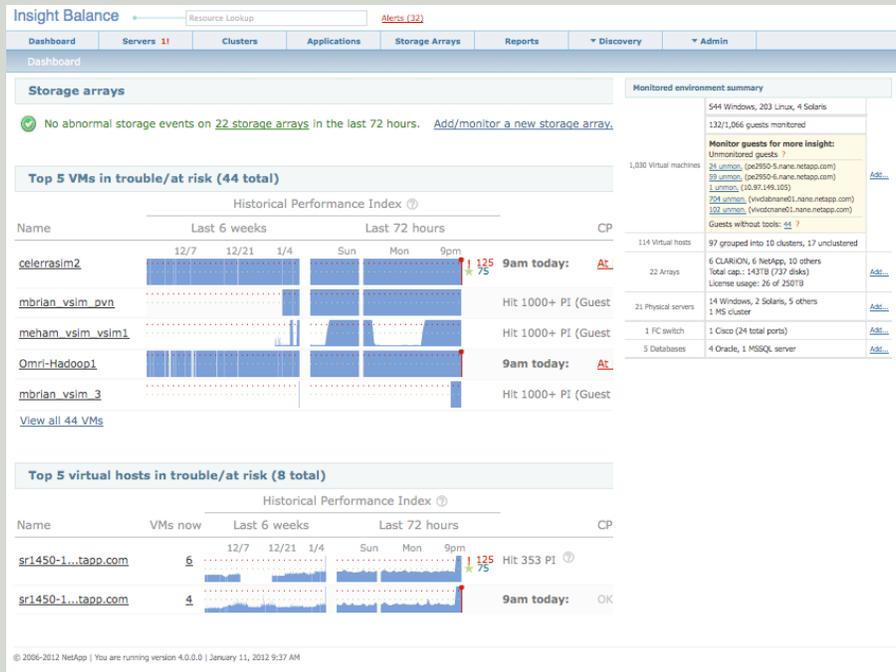
Infrastructure Response Time (IRT) is a metric that tells how long it takes for a workload to get finished, which is really the operable metric. (see graphic below) Latency, not absolute statistics like IOPS or capacity used, is what indicates a problem, or a potential problem. IRT shows just that, how well an application workload is being serviced by the infrastructure. When IRT spikes, that means an application is waiting for resources and a problem is in the making.

Disk Utilization is a predictive analytic that can show if the storage system can handle more workloads. This can help keep you from overloading the storage infrastructure and killing performance for existing VMs. Together with the Performance Index it can help keep the infrastructure balanced and optimized for the available resources.

Stuff happens

Dealing with the issues that will come up means getting notification of problems or hopefully, potential problems, so they can be dispatched quickly. OnCommand Insight Balance displays storage arrays, VMs and virtual hosts that are in trouble or at risk (see Dashboard graphic below).



Users can also see the "victims" involved, the server instances which are impacted, so they can tell how critical the problem is. As the disk contention analysis screenshot below shows, OnCommand Insight Balance identifies the root cause, or the "bully" server which started the problem.

Who Cares about Optimization?

Virtualization was typically sold to management as a way to get more 'bang for the IT buck'. This is a message that's been embraced by CIOs and IT Directors who are trying to do more with less. The only problem is they're not the ones making sure that VMware environment is actually performing as expected, and producing the ROIs that were promised. That's the job of the server and storage teams. Resource optimization is something that ends up being important to many people.

Getting the most out of the resources supporting this infrastructure requires a thorough understanding, a familiarity with how storage, CPU cycles and memory capacity are balanced. It's a real-time, ongoing tuning process, not a rote exercise. A dynamic virtual server infrastructure can change almost overnight, making it difficult to stay on top of those changes and keep the balance. OnCommand Insight Balance is designed to do just that.

Would you rather use a GPS or a Compass?

Optimizing resources means pushing a little closer to the limit, which can make people nervous; and it should if they don't have the information they need. Pulling back can lower utilization and increase costs, which may not hit ROI targets that management is expecting. Monitoring tools that are focused on individual elements in the environment can present a mountain of data, but don't always produce the actionable intelligence that's needed.

OnCommand Insight Balance takes the abundance of available data and applies powerful analytics to generate this intelligence, providing the confidence to push for real optimization. An analogy could be navigating a car with a GPS unit instead of a compass. The administrators driving this car will be much more willing to put the throttle of resource utilization down when they have accurate, real-time intelligence about where they are and where they're going.

IT problems aren't always totally clear cut and the cause of an issue often overlaps multiple groups, like the storage, networking and server teams. In the abstract world of virtualized resources, often nobody really has enough information, which can lead to the 'blame game'. So, in addition to making the right decisions, virtualization administrators have to defend them as well; like the math teacher used to say: "show your work". OnCommand Insight Balance can produce the data needed to justify decisions and identify where the problem does *or doesn't* lie.

Storage Swiss Take

For IT administrators keeping the virtual server infrastructure up and running at an optimum level is the prime directive. Their careers depend on preventing performance issues when they can, fixing problems when they have to and being able to justify their actions when they're asked. And all of this must be done in a changing environment, without wasting resources. NetApp OnCommand Insight Balance provides the right information at the right time to satisfy this prime directive so that issues don't become career limiting.