



CLABBY ANALYTICS

## *Advisory*

### **Netuitive 5.0 – Automated Performance Management for Private Clouds**

#### ***Executive Summary***

Enterprises looking to build private clouds need to remember to put money in their budgets for automated application performance management (APM) and business transaction management (BTM) software. Failure to do so can lead to major cloud management expenses as information technology (IT) managers, application and database managers, and network administrators will be forced to manually determine the causes of application or transaction failures in virtual cloud environments (a very complex task).

When evaluating APM and BTM tools, IT buyers should be aware that some of the newer APM/BTM tools are very dependent on manual policy setting. To set a policy, IT managers and administrators try to determine a given application's behavior — and then put in place thresholds using rules and scripts based on that application's history. This can be a highly manual process — and it can be laborious, time-consuming and error-prone (because humans are setting thresholds rather than relying on well-tested programs to do so). And, if anything changes in an application or related infrastructure, managers and administrators need to go through this whole process again.

*Netuitive* is a maker of a program environment that complements APM/BTM tools — a program that can automate the processes of application behavior tracking and threshold setting, thereby reducing application management labor costs while reducing errors. *Netuitive* consolidates performance management data from a wide range of monitoring tools including server, storage, network and applications, looking at literally hundreds of performance metrics in real-time, enabling end-to-end proactive management. *Netuitive* uses a mathematical correlation and statistical engine to “self-learn” the IT infrastructure, collecting and correlating the data and establishing behavior profiles, classifying what is “normal” and what is “abnormal” in any given situation. Based on this analysis, *Netuitive* can identify anomalies and predict potential performance issues up to 2 hours in advance, speeding root cause analysis, problem resolution and reducing false alerts.

In this *Advisory*, *Clabby Analytics* takes a closer look at *Netuitive*'s product offering.

#### ***Introduction***

As businesses build private clouds they often focus on how to integrate heterogeneous systems, on building a common infrastructure, and on physical/virtual systems management. These elements are all important in cloud building, but what happens when a performance problem occurs within a given cloud environment — or what happens when an application fails as it hops across multiple virtual servers within a given cloud? Without

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tools designed to troubleshoot failures or performance problems within clouds, people need to manually track and discover problems, and then affect repairs. And using human labor to conduct this sort of activity is both time consuming and costly...

*This situation highlights the need for application performance management and business transaction management tools. These tools enable businesses to identify and act on performance-related issues or potential application failures before they impact users. They do this by proactively monitoring application behaviors as applications move through cloud environments. By understand an application's behavior — and its "touch points" — managers and administrators can better tune that application (and are better prepared to troubleshoot that application should a problem occur).*

New APM/BTM tools have evolved that are very good at tracking application/transaction behaviors in the cloud. But some of these tools still require human intervention to an application's behavior patterns (such as what is normal for a given day of the week, or hour of the day for a given application). And then, based upon what they learn, these tools require IT managers and administrators to set in place policies, thresholds, and permissions for the applications that they manage.

Reston, VA-based Netuitive has implemented a tool that complements APM/BTM software products with a self-learning monitoring/policy engine. This engine is capable of using historical data to develop parameters for normal and abnormal behavior in any given situation and from that, automatically set thresholds that change as the environment changes. The remainder of this Advisory examines how Netuitive can be used to proactively manage applications in virtualized and cloud environments.

### *About Netuitive*

As stated above, Netuitive is headquartered in Reston, VA, USA. And the company also has European offices in the UK, Copenhagen and Paris. Netuitive was founded to develop and bring to market a "rapid learning" system that was a core research topic in mathematical statistics at UC-Berkeley and the University of South Carolina in the 1980s and 1990s. The core technology, a mathematics correlation and statistical engine, initially was used to understand energy delivery for utility companies.

In 2002, the company was reinvented with the goal of applying the technology to IT performance management monitoring. Twenty years of academic and commercial research resulting in nine patented technologies are the foundation of the behavior analysis engine that is at the heart of the Netuitive product today.

Netuitive product development efforts came to fruition in 2004, when the Netuitive SI (System Intelligence) product was released, incorporating Netuitive Trusted Alarms, which warn of potential systems performance issues. Netuitive Service Analyzer was later added to the product suite to manage application performance. Since then, the Netuitive product has evolved as enterprise infrastructure has become increasingly virtualized. In 2007, Netuitive released Netuitive SI for VMware, self-learning performance management solution for virtual environments. Netuitive 5.0, incorporating Netuitive SI and Service Analyzer, released in June 2010, includes advanced features for private cloud environments.

## Netuitive 5.0 – Automated Performance Management for Private Clouds

Industry recognition received by Netuitive includes “Best of VMWorld” in both 2007 and 2009, Codie Awards for Best Systems Management in 2009 and 2010, and also CIO Magazine’s Top 10 Virtualization Vendor for 2010

Privately held and well funded, Netuitive’s investors include Cross Creek Capital, Columbia Capital and Flagship Ventures. On June 14,2010, Netuitive received \$10 million in equity funding led by MK Capital and Rembrandt Venture Partners (co-founder of Opsware acquired by HP in 2007).

Netuitive has a broad range of large enterprise customers in many industries including financial services (Bank of America, HSBC, Wells Fargo, MetLife), telecommunications (AT&T, US Cellular, NTT Group), healthcare (BlueCross BlueShield, Cigna), government (AmTrak, US Army, US Airforce, FEMA) and consumer goods (Mary Kay, CVS and Orbitz).

### ***Netuitive - How does it work?***

Netuitive software combines dynamic threshold-based monitoring with event correlation. What makes Netuitive unique is that rather than those thresholds being set by administrators, Netuitive’s self-learning technology uses a statistical correlation engine to analyze and correlate thousands of system metrics in real-time to establish what is normal for any given situation or configuration. Thresholds are set and adapted based on science, rather than guesswork. Netuitive’s technology combines the following elements:

- **Self-learning** – thresholds not set by administrators but rather set based on historical data and patterns
- **Contextual** – Netuitive looks at key performance indicators (KPIs), based on data from monitoring agents, and learns how KPI’s work *together* in any given situation (day of week, time of day etc.). KPIs such as CPU, disk, and memory utilization are analyzed using multivariate regression analysis, examining each KPI in the context of the others. Then by comparing actual performance to expected contextual performance, Netuitive can identify anomalies and forecast potential problems up to 2 hours in advance.
- **Objective** – All thresholds and alerts are based on statistical mathematical analysis, looking at thousands of metrics, correlating those metrics and predicting performance issues – on a scale that cannot be achieved by human administrators.
- **Adaptive** - Netuitive technology analyzes each KPI at three levels – real-time, contextual and forecast- and determines acceptable performance for a given point in time. Netuitive’s learning algorithm is based on historical data that is constantly being updated as new data becomes available.
- **Agentless** – Netuitive uses existing monitoring tools, improving their effectiveness by correlating data from multiple sources and analyzing them in the context of one another.

Netuitive is ideal for virtualized cloud environments that are dynamic by nature. Since Netuitive is correlating data from many sources and continuously adapting to a constantly changing infrastructure, potential problems can be forecast in advance, and root causes can be isolated across both physical and virtual infrastructure.

***A Closer Look at Netuitive 5.0 — Netuitive’s Self-learning Performance Management Environment for the Cloud***

Netuitive doesn’t replace existing APM/BTM tools, it augments those tools by improving their effectiveness. No new agents are required to support Netuitive on APM/BTM products from companies such as CA Technologies, HP, Optier and Gomez — these products are currently supported as part of Netuitive’s 5.0 offering. And support for other APM/BTM products can easily be added by creating extensions using Netuitive’s software development kit.

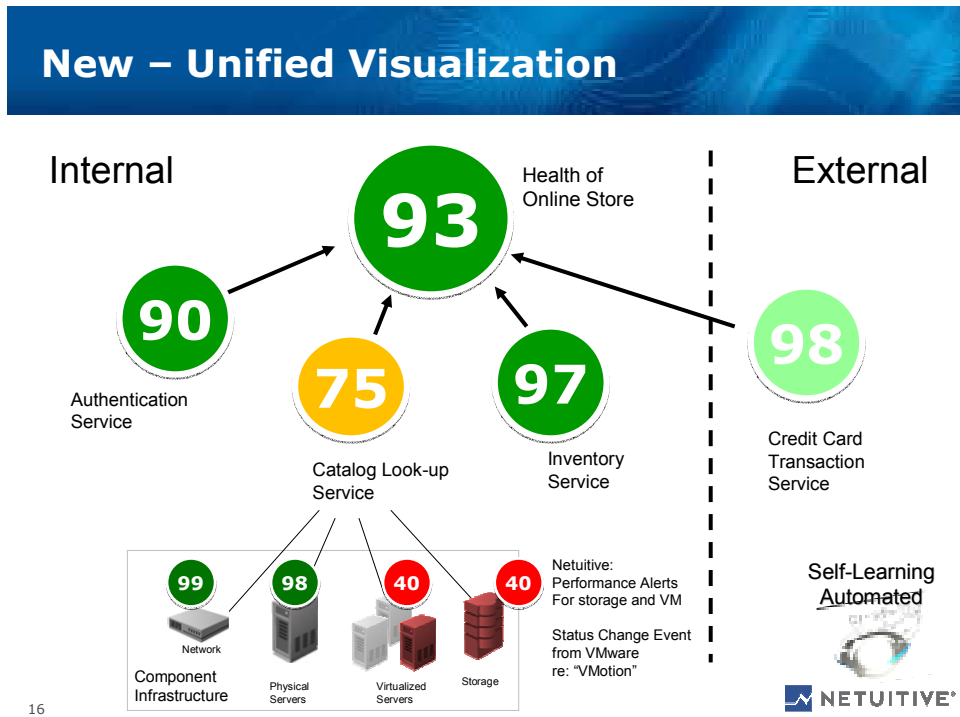
*Netuitive 5.0*

Netuitive 5.0 is the company’s flagship performance management tool. It was released in June 2010, and adds several features that make Netuitive ideal for application monitoring and policy setting in private cloud environments. Two of the most important features in this release are unified visualization and a performance management database.

*Unified Visualization*

Netuitive’s unified visualization aggregates service views regardless of monitoring source, geography or physical/virtual and presents it in a dashboard showing end-to-end service health. Figure 1 (next page) demonstrates what would happen when an online transaction is initiated. In this case, the on-line transaction would trigger sub-transactions such as authentication, checking inventory, performing a credit check. The dashboard identifies where a potential problem may exist and allows drill-down to determine the root cause. In this way, a configuration change can immediately be analyzed to determine its impact.

***Figure 1 – End-to end service view aggregated from multiple sources***



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Source: Netuitive 2010

## Netuitive 5.0 – Automated Performance Management for Private Clouds

### *Netuitive's Performance Management Database (PMDB)*

Netuitive 5.0 also includes a PMDB that is a single repository for performance-based data from all monitoring sources. This enables organizations to leverage the vast amounts of performance –related data collected on a daily basis. Data can be exported to business intelligence tools and used to make capacity management and optimization decisions by identifying trends related to resource utilization of servers, storage and networks.

The PMDB:

- Collects raw performance data from physical and virtual systems
- Integrates data from any monitoring source
- Low storage requirements due to unique Netuitive algorithm
- Supports metadata to describe system attributes
- Works with CMDB's

Netuitive 5.0 provides a unified view of service health that maps resource dependencies in virtual environments, enabling administrators to quickly identify root causes and pinpoint potential performance bottlenecks. The PMDB captures this wealth of information and makes it usable for capacity planning and analysis of resource usage over time.

### ***Summary Observations***

*Clabby Analytics* wrote this *Advisory* to make IT buyers aware that it would be wise to ensure that funds are budgeted for APM and BTM software if those buyers are actively building private cloud environments. Failure to do so can result in exorbitant application management costs as humans (IT managers and administrators) attempt to track applications as they transverse amorphous clouds.

To manage performance in virtualized cloud environments, management tools must be capable of understanding and adapting to virtual environments that are dynamic and constantly changing. Service management tools are needed to manage services (that may be comprised of a collection of subservices) as a whole rather than looking at each component. Proactive management of these environments requires not only an understanding of how each VM, host server, resource pool, cluster and storage system behaves in isolation, but how they work in relation to one another overall. Netuitive automatically learns these performance dependencies.

Netuitive's "self-learning" capabilities complement performance tools that may already be in use at enterprise customers. Netuitive software can automatically set and update policies by collecting and correlating data from a wide range of sources (like BMC Patrol, Openview, SCOM, Tivoli etc), but they can also use the data for root cause analysis - identifying the underlying system causing performance issues. These cross-correlation capabilities enable end-to-end, cross-silo service management, important for virtual data centers and private clouds.

## Netuitive 5.0 – Automated Performance Management for Private Clouds

As buyers evaluate APM and BTM products, *Clabby Analytics* advises that they pay particular attention to how their prospective product choices handle policy establishment and setting and how they work in conjunction with other tools. Netuitive's unique ability to collect and correlate data, and automatically set thresholds and policies based upon mathematical analysis, sets Netuitive apart from other tools. By automating these tasks, enterprises can take expensive computer management labor out of the equation — leading to lower cloud operating costs as well as fewer administrative errors.

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