

# OPTIMIZING YOUR VIRTUAL ENVIRONMENT

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A How to Maximize Virtual Performance, Availability & Capacity... Cost Effectively.

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When CIOs, IT Managers and Administrators need to understand the inherent love/hate relationship that comes with monitoring and managing a heterogeneous datacenter that includes a complex virtual environment.

As virtualized servers continue to move from testing to production environments, the threat of process and infrastructure breakdown is mounting.<sup>1</sup> At present, IT departments are precariously exposed to a growing number of virtualization risks, including tumbling down Gartner's IT Maturity Curve, a model designed to measure an IT organization's strengths and weaknesses relative to best practices in the field.<sup>2</sup>

With this in mind, IT executives and managers are looking for solutions that provide a complete dashboard of the IT environment for better visibility and control – across both the virtual and physical environments. Many are also exploring ways to effectively leverage their existing investments in IT Service Management (ITSM) frameworks, tools, and processes – to extend the value of these assets.<sup>3</sup>

<sup>1</sup> Enterprise Management Associates, "Virtualization and Management: Trends, Forecasts and Recommendations."

<sup>2</sup> Gartner, "Survey Results: IT Infrastructure and Operations Management Maturity."

<sup>3</sup> Gartner, "The Server Virtualization Marketplace."

# THE LOVE/HATE RELATIONSHIP WITH VIRTUALIZATION

It's a complicated relationship. As buying trends and surveys of purchasing intent clearly suggest, IT organizations continue to virtualize infrastructure at a growing rate. However, an array of issues still remain that make increased virtualization painful and expensive.

## Why do enterprises love virtualization?

The cost savings; no big surprise there. Virtualization enables IT organizations to radically cut costs associated with hardware, power, and space. By running more applications on fewer machines, they directly attack the inefficiencies associated with the hardware proliferation in the past.<sup>4</sup>

But there are other gains to love. IT teams can be more responsive by being able to easily provision additional capacity to meet new requests. As a result, IT is able to scale resources up or down to meet the changing demands of the enterprise. These gains in agility and performance clearly reflect well on IT organizations under pressure in today's fast-paced and hyper-competitive markets.

And, of course, everyone loves being on a winning team. The market for virtualization is expected to continue growing by leaps and bounds, as more and more companies continue to virtualize their infrastructures.

## So what's the problem? Who hates virtualization?

One of the chief reasons is that incumbent tooling and process – including ITSM frameworks – can break down under the complex stresses of virtualization. Moreover, the real-time computing made possible in a virtual environment often disrupts existing processes. Whether provisioning asset management or engaged in Information Technology Infrastructure Library (ITIL) processes, process breakdowns are becoming a common, yet unacceptable, occurrence.

Yet another problem revolves around complexity and staffing. Many enterprises are seeing no savings in labor costs – and in many cases, increases. Why? Virtualization makes IT more complicated. Considering that virtualization is still a fairly new technology, it's difficult to find people that have the skills and experience to run it properly.<sup>5</sup>

In addition, IT executives and managers are experiencing governance problems due to the unmanageability of their virtualization efforts. Furthermore, they are running into licensing problems. As virtual instances are spun up, they are uncertain whether purchased licenses cover their activities. Keeping track is proving difficult.<sup>6</sup> Additionally, software costs are increasing, as each new instance demands licensing of software, which then escalates costs. Where have the savings gone?

While market demand for virtualization continues to grow, so do the problems associated with managing it. IT departments need a solution to make virtual infrastructure easier to manage, to remove compliance problems, and to fit within the existing software (if needed).

<sup>4</sup> Goldworm, Barb and Anne Skamarock, *Blade Servers and Virtualization*, Wiley

<sup>5</sup> Enterprise Management Associates, "Virtualization and Management: Trends, Forecasts and Recommendations."

<sup>6</sup> Gartner, *Virtualization Changes Virtually Everything*.

# CHALLENGES FACING IT MANAGERS AS VIRTUALIZATION SURGES AHEAD

Facing the virtualization wave, IT teams are struggling to keep their heads above water with a number of key challenges. In order to capitalize on this powerful trend and ensure they are meeting the expectations of the enterprise, IT managers and administrators must address these challenges effectively.

## Cutting Costs, Driving ROI, and Maximizing IT Resources

While server virtualization promises hardware savings, it is offering no savings (and more commonly an increase) in terms of labor cost, from overtime to training to new skills hiring. As the complexity increases, IT managers are struggling to find the talent necessary to manage the operational issues. Indeed, the complexity itself adds to the workload of existing IT professionals. As it stands, there is no opportunity to realize labor savings or redeploy IT talent to areas that add higher value to the business. Nor can organizations maximize IT resources if they don't have control and complete visibility of the entire virtual environment – another problem hindering IT payback. Clearly, an easier (and thus more productive) way to manage and monitor the virtual environment is needed.

## The Dreaded IT Monitoring “Tool Soup”

The rise of virtual platforms has increased the demand for better monitoring tools. However, singly focused point tools and niche virtual monitoring tools lead to “tool soup” – the dreaded array of many different monitoring tools across the IT department. In some cases, the server team has their own monitoring tool, the virtual team has their monitoring tool, the applications team has their monitoring tool, the network team has their monitoring tool, and it goes on. This leads to wasted IT budget in maintaining and support costs on various tools. However, perhaps the most painful side effect of many monitoring tools is the arguing between teams as to whose fault it is when there's an outage or performance problem. Miraculously, each team's tool shows it's not their problem. This infighting drives Mean-Time-To-Repair of issues through the roof and kills the team mentality. The end result is wasted labor spend, wasted IT budget, unhappy end-users and continuous infighting. That's a recipe for management stress. The solution is to get all the IT teams working from one IT dashboard that can monitor, alert and report on performance and capacity across all IT silos. The dashboard should have the ability to integrate with the tools you want to keep as you consolidate your monitoring tool set. Moving from 6-7 monitoring tools down to 1-2 makes a huge difference in budget and in service delivery.

## Managing Continual Change

While IT organizations are expected to play an increasingly agile role in a fast-changing environment, they are unable to meet this objective if their monitoring and reporting software is either too shallow or too complex to be useful. As virtualization increases, the risks and threats associated with this “Wild West” approach to uncontrolled virtual IT only escalates, leaving unprepared IT managers in the cross-hairs.

<sup>7</sup> Gartner, “Introducing the Gartner IT Infrastructure and Operations Maturity Model.”

## Managing IT More Proactively

IT managers may be expected to take a more assertive and responsive approach to IT management, but virtualization threatens to undermine these efforts. For instance, virtualization is causing constant disruptions in terms of provisioning and change management processes, whereas operational departments used to have dedicated servers and stable IT processes. The complexities linked to virtualization can lead to disruptions and downtime that undermine performance. Hard won gains in terms of IT control, standardization, and stability are suddenly lost. As a result, virtualization threatens to drive IT organizations back down Gartner's IT Maturity Curve, setting them further away from best practices in the field.<sup>7</sup>

## Gaining Better Visibility and Control

Many existing monitoring tools don't do a great job of watching over the virtual environment. They are designed for the physical environment of dedicated servers. In addition, many of the virtual monitoring tools are point tools, and don't integrate well into the existing IT dashboard or framework. What's missing from many IT departments is the ability to monitor the entire datacenter (servers, applications and network) with a single IT Dashboard across both virtual and physical environments. Without clear visibility into all IT systems, IT lacks the control necessary to deliver predictable performance and results.

## Proving IT Value to Business

Yet another challenge facing IT is the necessity to document and demonstrate the business value of IT to the rest of the enterprise. In many cases, IT is unable to easily measure and quantify their impact. As virtualization proliferates, conventional measurement tools and approaches are rendered inadequate or even irrelevant. Unable to prove its value to the business, IT becomes vulnerable to budget cuts and employee cutbacks that are not reflective of their true worth to the enterprise. To help solve this problem, Service Level Management (SLA) reporting and monitoring should fit into the virtual strategy and be straightforward to implement.

# CAUTION AHEAD

There may be a reckoning ahead, especially for IT managers who don't see what's coming. At a recent industry conference, one leading analyst told a group of IT managers that they might soon be searching for new jobs if they didn't quickly take active steps to manage and monitor their virtual environment as an integrated part of their overall Systems management. No one is safe, he suggested, when it comes to virtual environment management that isn't integrated into the datacenter's Systems Management toolset.

Fortunately, the message is loud and clear. Many IT departments have already taken the necessary steps toward better virtualization management and monitoring, addressing the associated challenges. Where do we go from here?

# THE NEED FOR DEEP VIRTUAL MONITORING AND MANAGEMENT

To lock in and extend the significant gains of virtualization, companies are now actively investing in systems management software that better manages and monitors the performance and capacity of the virtual environment. Realizing that most of the existing ITSM frameworks are not optimized for the challenge of virtualization or that point tools are just adding to the complexity, they are seeking solutions that can provide a comprehensive dashboard of the entire IT environment, including all physical and virtual assets.

As a result, the hot new category in today's IT market is not just Virtualization Monitoring and Management, but a complete IT Dashboard. IT decision-makers increasingly recognize they must have these capabilities in order to ensure IT operations remain in line with today's best practices and processes.

Advanced solutions in this category offer several key benefits:

## Better Management of Virtual Asset Relationships.

The true value is not in managing just the physical server or just the virtual server, but in monitoring and managing the business applications and how service resource dependencies can impact performance across all IT environments. IT executives and managers must provide their system administrators with the right tools to successfully manage their infrastructures. To make the right decisions, administrators need to see an integrated perspective that shows the relationship between ESX server performance and VM workload performance. Now, not only is the performance of the ESX server visible, but so are the performance metrics of instances and the applications that reside inside them. Today, the allocation of shared resources is so easy that over-provisioning and sprawl are resulting in poor capacity management and application performance. This can have a massive effect by wasting finite resources. Advanced solutions provide reporting that clearly illustrates potential dependency bottlenecks, and analyzes historical capacity utilization to help reclaim chronic over-provisioning. This helps resolve resource problems faster, leading to increased capacity and stability.

## Controlling Virtual Sprawl

Uncontrolled VM creation ultimately results in virtual sprawl, a state where instances seem to be "lost" within one's VMware ESX infrastructure. That can be an IT manager's nightmare, as resources quickly start thinning out. In addition, the optics and perception of shared infrastructure can lead to easy provisioning. The user base might not appreciate that virtual infrastructure is a shared resource and not an infinite one. Advanced solutions address sprawl by quickly discovering ESX servers and automatically providing visibility into running VMs. They automatically find new instances as they are spun up, giving IT managers and system administrators the visibility, control, and auditability required to manage VM lifecycles. Such solutions also enable systems administrators to see where their instances are migrating to at any given time and assess the performance of that infrastructure.

## Maximizing Hardware Savings

A large part of the savings from virtualization is found through increasing the VM density to maximize IT resources. This has huge cost saving implications in terms of hardware, footprint, power, and cooling. Advanced solutions help system administrators easily understand the workload performance characteristics of VMs, leading to increased VM density on each server without sacrificing performance. The end result of density optimization is increased capacity and decreased costs. This ensures IT departments are driving the most out of their IT investments.

# Reduced Labor Costs through Streamlined Monitoring & Management

With advanced Virtual Monitoring and Management, IT organizations gain the capabilities to proactively and responsively address IT problems. The complexities of virtualization no longer become critical hurdles when there is visibility and control over IT assets. This enables companies to reach expected performance levels with a lean IT department, and allows IT professionals to focus on higher value and proactive IT projects. Ultimately, companies can begin realizing the full benefits of virtualization – achieving IT labor productivity gains that match the benefits associated with greater hardware utilization.

## TIP

Enterprises that possess these strengths are well positioned to begin moving up Gartner's IT Maturity Curve. They put smart processes in place, standardize operations, and reach a consistently high level of performance. New solutions should put the power back in the hands of the IT executives, managers and their system administrators.

# THE VIRTUAL MONITORING GUIDELINES

When enterprises begin looking for Virtual Monitoring and Management solutions, they should ensure the investment delivers the highest value available at the lowest budget and complexity cost. Here are some of the key criteria that should help guide these decisions:

## 1 Comprehensive Visibility through a “Complete IT Dashboard”

Forward-looking IT managers recognize the need for a consolidated view of the entire IT environment. This perspective must cross domains and environments – both physical and virtual. The new virtual environment should fit right into the overall dashboard view, and not sit outside it. These same Systems Management solutions must also provide visibility across platforms, applications, networks and databases. Look for a single, unified, and comprehensive view of your entire infrastructure – presented through a complete IT Dashboard.

## 2 Easy to Use SLA Monitoring and Reporting:

It's essential to choose an IT systems monitoring and management software that helps IT set, monitor and report on IT service level agreements (SLAs) across all IT environments. Many companies are actively using or implementing SLAs today, while others have SLAs in the 12-18 month plan. SLA monitoring and reporting is a critical need that a monitoring tool should satisfy. Monitoring an SLA is no good if it tracks IT service delivery only on physical or only on virtual infrastructure and applications. SLA monitoring software needs to work across all virtual, physical and even cloud infrastructure and applications. Look for SLA targets and progress that are clearly shown in a dashboard view with real-time status and SLA trends over time. Detailed SLA reporting should measure the impact of each infrastructure element on SLA delivery, and grouping physical, virtual or even cloud infrastructure and applications into each SLA is very important.

Proactive SLA alerting that can notify IT if the SLA is trending to miss its target before it's too late is critical, as it provides IT with time to fix the issue before the SLA is missed. Lastly, SLA monitoring, alerting and reporting should be easy to get started with, and should be set up in less than an hour in most cases.

### 3 Software that Can Leverage Your Existing Management Tools:

Companies should seek software that can be integrated into their stack – those that are easy to use and adapt quickly to existing tooling. It's always best to consolidate monitoring tools away from the "monitoring tool soup" to get down to as few high value tools as possible. However, companies may not need to rip and replace all their systems management tooling that IT has already invested in. New solutions should connect – without complexity – to incumbent tools and processes, and leverage that investment.

### 4 Depth of Metrics:

IT organizations need the same kinds of value and service level measurement tools for virtualization that they have developed for physical infrastructure. However, some traditional methodologies and metrics for evaluating server densities and performance do not apply in virtualized environments (like static image density thresholds and aggregating image metrics). Look for solutions that embed the correct measurement and tracking capabilities for the virtualization ecosystem and make them accessible through the IT dashboard.

### 5 Low Total Cost of Ownership

Expect solutions to be enterprise proven but self-deployable with minimal training required. This saves up to 50% of ITSM costs in the form of deployment and consulting services. One should also expect lower cost licensing than is traditional. Under per-element licensing models that offer the entire suite in one package, customers can monitor, alert and report on all performance, availability and capacity metrics across all physical and virtual servers, applications, and networks for one low per-element-monitored price. In addition, support should be from subject matter experts (SME) that respond quickly to problems.

### 6 The Future of Virtualization

In the years ahead, companies will increasingly expand their virtualization investments across many technologies, from x86 boxes to virtualized "big iron." Seek a vendor that offers a complete solution for the heterogeneous wave of virtual technologies that are coming. As IBM, HP, and Sun move to new virtual platforms, it will be critical to have performance monitoring, capacity planning, and other capabilities that manage virtualization effectively on all platforms as well as the x86 systems today. Don't invest in solutions that are limited to only the platforms on the market today. Choose a vendor with clear forward capability and a proven track record.

As virtual environments proliferate across the enterprise landscape, it's essential that they be monitored and managed together with the rest of the IT. Discussed above are some of the benefits and inherent complexity that virtualization has thrust upon companies today. Deep virtual monitoring and management is now an enterprise requirement, and these responsibilities fall squarely on the shoulders of IT. It's important to understand and have a game plan for: the management of virtual asset relationships, controlling virtual sprawl, maximizing hardware savings, reducing labor costs through easier and streamlined monitoring and management, and ensuring the physical, virtual and cloud IT investments are being deeply monitored through a single, complete IT dashboard.



When looking at a short list of vendors for managing and monitoring the virtual environment, make certain the solution has: Comprehensive Visibility through a Complete IT Dashboard, Easy to Integrate Software that Leverages Existing Management Tools, Deep Metrics, a Low Total Cost of Ownership, and has forward functionality to handle "The Future of Virtualization."

Consider these criteria as you look ahead for ways to manage and monitor your own virtualization initiatives. Clearly, there will be a great deal of investment in such solutions as IT organizations seek ways to continue rising up the maturity curve and look to solutions that can help them fully realize the payoffs associated with virtualization.

## **THE CONCLUSION**

# STRONGER IT MANAGEMENT, MORE PRODUCTIVE IT ADMINISTRATION & LOWER COSTS

Monitoring servers, applications, IT services and networks are essential to helping a company maintain service level agreements, meet contractual obligations, improve customer and user experience, and move forward into new markets.

The benefit of a unified IT systems management and monitoring suite that provides a comprehensive IT dashboard across the enterprise becomes obvious very quickly. With properly monitored IT service delivery, a company can ensure that its mission-critical applications and databases (email, CRM, ERP, website, e-commerce, middleware) are operating at optimum efficiency and productivity. End users, including employees and customers, are neither frustrated nor disappointed by unreliable service. Reliable IT service delivery will help develop a sense of trust and confidence in IT, an important component in raising the value of IT and IT staff within the company.

The adoption of unified IT systems management and monitoring can alter, for the better, the entire role of a company's IT team. IT operations and administration staff can focus on proactively maximizing IT performance to meet ever-changing business requirements, as opposed to constantly troubleshooting IT fires. Indeed, smart IT management can not only create a competitive advantage for the business, but can easily communicate that increase in value to the business leaders.

# FREE IT MONITORING CHECKLIST & FEATURE/COST CALCULATOR

If you are considering evaluating IT Monitoring and Dashboard solutions, this **IT Systems Management Vendor Evaluation Checklist** and **Product/Vendor Feature and Cost Calculator** are an excellent way to start. They are designed to be vendor agnostic and customizable to help you compare different products. A free download is available here:

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