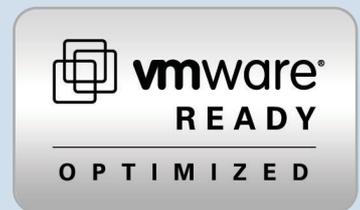


# The eG Monitor for VMware® Infrastructures™

Management Solution for VMware Virtual Computing Environments



## Benefits of the eG VM Monitor

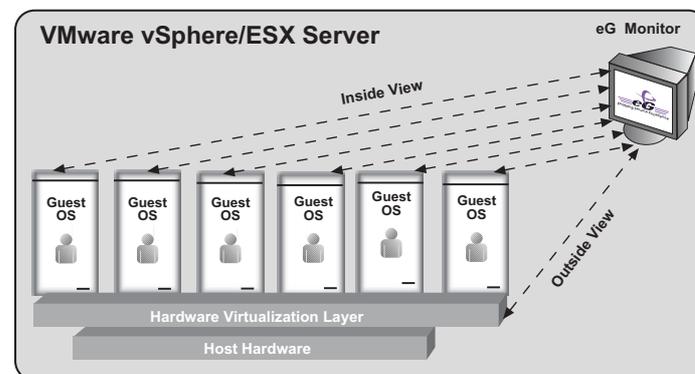
- **Combined external and internal views:** Real-time performance view of what the vSphere/ESX server sees about the guest VMs and what the guest VMs see internally.
- **Deep diagnostics:** With a few clicks drill down to the exact processes causing a problem.
- **Automatic correlation:** Analyze performance across layers of the VM infrastructure - the VM host, between the host and the guests, and across VM guests.
- **In-depth VDI monitoring:** Know which users logged in, when, what applications they accessed, what resources they used, etc.
- **Monitor virtual environments with service views - not as silos:** Correlate the performance across applications hosted in the VMware environments, discover VM dependencies, and identify performance bottlenecks.
- **Single agent licensing:** One agent monitors the VM kernel, console, and all the VM guests.
- **Compatible with VMware Live Migration:** Detect live migration of servers across vSphere/ESX guests, determine the efficiency of live migration.

Virtual server technologies provide companies with the ability to do more with less resources. However, for a technology that is supposed to make computing easier, virtualization is becoming quite complicated to monitor and manage. Effective monitoring and management is critical for these environments to be adequate replacements for traditional hardware-based infrastructures.

The eG Monitor for VMware® Infrastructures (the eG VM Monitor™), part of the eG Enterprise Suite™, is a comprehensive solution for monitoring and managing all aspects of virtual hosts and guests, whether the infrastructure is used to support server or desktop applications. Coupled with the ability of the eG Enterprise Suite to monitor 120+ applications, including Citrix, Oracle, IBM, SAP, and others, the eG VM Monitor – with its patent-pending In-N-Out Monitoring™ technology -- provides a comprehensive end-to-end solution for monitoring and managing the performance of virtual IT infrastructures.

## Challenges in Monitoring Virtual Environments

Since a single VMware® vSphere/ESX Server is used to host multiple virtual guests, a single malfunctioning application on a guest can degrade the performance seen by applications hosted on the other virtual machines. Besides resource contention among virtual guests, applications executing on the VM can also affect the performance of the virtual infrastructure. Performance degradations could also occur if a virtual guest is not configured with sufficient resources to handle its workload. Furthermore, VMware® vCenter and other SNMP-based monitoring solutions measure the resource usage levels of the virtual machines but do not look in-depth into each guest operating system to detect abnormalities. Deploying agents on each guest machine to track its operation is a time-consuming task, has a higher resource overhead, and involves additional cost.



*eG agents track the performance of each guest relative to shared infrastructure resources (outside view) as well as the workload and application mix of the individual guests themselves (inside view).*

## In-N-Out Monitoring and Root-Cause Diagnosis using eG Enterprise

The eG VM Monitor™ extends the unique eG single agent technology to virtual environments. Using a patent-pending In-N-Out Monitoring™ approach, the eG VM Monitor provides a comprehensive view of the vSphere/ESX Server, including the performance of the VM kernel, the console operating system and all of its virtual guests. eG agents only have to be installed on the vSphere/ESX Servers or on any remote Windows/Linux/Solaris host in the environment. Using vSphere/ESX server APIs, the agents provide an “outside view” of a guest’s performance. The relative resource usage levels of the guests show where the performance hogs may lie. To complement the outside view, the eG agent obtains an “inside view” that details the user activity, resource allocation and the application mix running inside the guest operating system. All of the metrics collected by the agents are baselined automatically by the eG VM Monitor, so that IT administrators can be informed proactively of any deviations from the norm. No other virtualization monitoring or management solution offers this combination of features.



Using a custom vSphere/ESX Server model, the eG VM Monitor correlates performance across the host and guest VMs. Extensive pre-built reports enable rapid identification of bottlenecks and streamline capacity planning.

From a monitoring and management standpoint, the eG VM Monitor goes well beyond managing virtualized servers as discrete entities. End-to-end business service views show the applications and network devices that support each business service, and the inter-dependencies among them. Applications are associated with the virtual machines they run on, and each virtual machine is mapped to the physical machine upon which it is hosted.

The dependency of the virtual machines to physical machines is determined dynamically, so as to support the VMware VMotion® Live Migration technology. A patented root-cause diagnosis engine analyzes the service topology graphs and the virtual-to-physical machine mappings to pin-point where the problem areas in the infrastructure lie.

## What the eG VM Monitor™ Reveals

### vSphere/ESX Host Monitoring

- What is the CPU load on the vSphere/ESX kernel, on the console, and each of the virtual guests?
- What is the free memory in the vSphere/ESX kernel and the console?
- Which network interfaces are seeing the most traffic?
- Which storage devices are seeing high activity?
- How much free space is available on each of the disk partitions?
- Are there processes on the console VM that are taking up excessive resources?

### Virtual Machine Monitoring

- How many virtual machines are running? What are their IP addresses/host names and operating systems?
- What portion of the physical server's CPU is used by each VM?
- Are there times when a VM is not getting CPU cycles; i.e., is the ready time too high?
- How much of the memory allocated is a VM actively using?
- Is the balloon driver enabled for a VM, and how much memory has it freed for each VM?
- Is there excessive paging or memory thrashing in a VM?
- Which processes on a VM are taking up high disk, CPU or memory resources?

- Do all the disk partitions inside the VM operating system have adequate space?
- Is there excessive queuing for disk access on any VM operating system? Which applications could be causing these accesses?

### Virtual Desktop Monitoring

- How many desktops are powered on simultaneously on the vSphere/ESX Server?
- Which users are logged on and when did each user login?
- How much CPU, memory, disk and network resources is each desktop taking?
- What is the typical duration of a user session?
- Who has the peak usage times?
- What applications are running on each desktop?

### VMotion Monitoring

- Which vSphere/ESX Server is a virtual guest running on?
- When was a guest moved from an vSphere/ESX Server? Which vSphere/ESX Server was the guest moved to?
- Why was the guest migrated? What activities on the vSphere/ESX host caused the migration?

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## About eG Innovations

eG Innovations, Inc. ([www.eginnovations.com](http://www.eginnovations.com)) is a global provider of performance monitoring and triage solutions for both virtual and physical IT infrastructures. The company's patented technologies provide proactive monitoring of every layer of every tier in the infrastructure, thereby enabling rapid diagnosis and recovery in enterprise and service provider networks. By ensuring high availability and optimum performance of mission-critical business services, eG Innovations' solutions help enhance customers' competitive positioning, lower operational costs and optimize the performance of their infrastructures. The company's eG VM Monitor™ has won several industry awards including the "Best of VMworld 2008" in the Application and Infrastructure Management category and Readers Choice Awards from VirtualizationAdmin.com and Virtualization Journal.