

# OPNET ACE Live VMon Reveals Virtual Network Performance

## Abstract

While the vast majority of today's IT shops have deployed server virtualization technologies, a significant minority of operations teams feel that they have all of the management tools they need to fully manage this emerging architectural category. Management technology vendors are responding with support, especially for monitoring and managing the new way in which computing platforms are being used; however, other tools, such as those responsible for monitoring networks, are still catching up. OPNET has recently announced a new version of their ACE Live network performance monitoring technology which is specifically designed for deployment inside a virtual computing environment, thus providing valuable visibility into activity which is otherwise inaccessible by traditional network-based monitoring.

## Event

On June 19, 2009, OPNET announced plans to deliver a new member of their ACE Live line of performance monitoring products, which are designed to provide network-based visibility into application and service traffic from various points across the enterprise IT infrastructure. The new product, ACE Live VMon, has been specifically designed for deployment within a virtual machine (VM) instance on a virtualized computing platform. ACE Live VMon attaches to the virtual switch (vSwitch) that is part of the virtual computing architecture, to reveal all of the traffic that flows between VMs living within that physical host system. With this viewpoint, ACE Live VMon can provide traffic details on previously hidden system-to-system interactions for flow-based reporting and performance troubleshooting.

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## Context

Server virtualization is clearly here to stay. Its adoption is rampant, and the cost factors surrounding it are compelling. Very few IT shops have been able to resist the temptation offered by better utilization of existing computing capital infrastructure and lower power/cooling costs of less total CPUs in operation. And yet, the dominant opinion among those deploying virtual server technologies is that management tools and technology have not kept pace. According to EMA research published in January 2009<sup>1</sup>, only about one third of operations teams feel that they have the management tools and practices in place to properly manage their virtual server deployments.

Nowhere is that more true than in dealing with the new network elements that server virtualization introduces into the picture. Few systems administrators realize or appreciate the fact that with every hypervisor comes a virtual network switch, which handles traffic between each VM hosted by the hypervisor. And that virtual switch is, for all intents and purposes, a network element which connects network endpoints – they just happen to reside within the confines of the same physical host.

Herein lays a problem and an operational risk. Most data center operations teams use some form of network monitoring to help them keep track of server-to-server traffic and troubleshoot performance issues – especially those thorny, difficult ones that aren't immediately apparent due to a smoldering router or shrieking disk array. But how can you get that information when you have server-to-server traffic that never goes

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<sup>1</sup> <http://www.enterprisemanagement.com/research/asset.php?id=1104>

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across a wire? How can you tell which VM is the source of an issue if part of your transaction execution path is hopping between VMs on the same physical server? The answer is to find a way to tap into the traffic going across that vSwitch, so the same tried-and-true methods of network-based monitoring can be brought to bear.

Several network management tools vendors have been taking shots at solving this problem. Some are adding discovery of virtual systems and adding relationships between physical and virtual systems into their topology and relationship models, for event correlation and root cause analysis. Others are working on adding vSwitch to change and configuration control functions. And a few, like OPNET, are cracking open the cover of the virtual system to allow network-based performance monitoring.

OPNET is not the first to work on providing visibility into traffic traversing vSwitches, but they are taking a unique approach that will be appealing to many. Previous offerings to this problem have mostly taken one of two forms – either dropping a packet analyzer into a VM instance, so it can be used to analyze VM-to-VM communications on an as-needed basis, or providing a “virtual tap” function to send a copy of all (or a filtered subset of) packets traversing the vSwitch out a physical port for external capture and analysis. A few others are tapping into the experimental NetFlow support within VMWare’s offerings to build some sense of what applications are actively traversing the vSwitch.

OPNET’s approach is to put a fully functional real-time, packet-based monitoring engine within a VM, so a broad range of performance metrics about all of the session and transaction flows traversing the vSwitch can be collected, calculated, and forwarded up to a central dashboard and reporting engine – in this case, OPNET’s ACE Live Director. This new viewpoint is then added to OPNET’s existing VM monitoring capabilities via their Panorama system management tools – a combined set of features that provide for some very effective troubleshooting workflows.

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## Key Ramifications

OPNET’s new ACE Live VMon will deploy within a physical host that is running server virtualization software. It will use a virtual SPAN port on the vSwitch as its connection point to the virtual network. Metrics collected are then forwarded to the ACE Live Director platform for dashboard access, troubleshooting, and reporting. Initial support is for VMWare ESX and ESXi only, but that will change based on user demand.

The immediate benefits of this approach are as follows:

- Ability to monitor/report the performance of transactions and sessions that are flowing between VMs on the same physical host.
- Ability to troubleshoot VM-to-VM interactions using the rich and definitive data set afforded by packet-based monitoring.
- Ability to measure end user experience from a viewpoint within a VM host, improving both accuracy of measurements and clarity within virtualized environments
- Easy deployment – can be deployed as a software image locally or remotely and does not require any maintenance window such as would be needed for tapping a physical network link.

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Alone, these capabilities are valuable, but linked with OPNET's Panorama technology, the combined solution represents a powerful combination of viewpoints. Basically, when ACE Live VMon identifies a performance problem with a specific VM, the operator interface allows a direct contextual drill-down into Panorama to get specific performance details of that VM as well as the overall physical host.

## EMA Perspective

There's no getting around it – virtualization is now part of operations reality and is not going away anytime soon. Consequently, operations teams need to acquire and deploy management tools to help protect service quality despite this new architectural aggravation. With this product introduction, OPNET is addressing an important challenge and risk to data center operations that comes along with the deployment of virtual computing technologies.

Further, this is not a first attempt by OPNET to address this growing set of issues. They have built expertise and familiarity with virtual computing technologies and with VMWare specifically, by means of the previously released ACE Live Rover (a portable that can be deployed as a VM instance) and ACE Live on RSP (which is deployed as a VM instance on Riverbed Steelhead appliances). Add to that the existing, fielded functionality OPNET offers for detailed virtual and physical host monitoring through their Panorama line of systems management tools.

Collectively, OPNET is constructing a broad set of management tools and techniques for helping operations teams keep out in front of the virtualization tsunami. Organizations trying to gain insights into virtual systems performance and better troubleshooting should consider OPNET's offerings as a viable solution.

## About EMA

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst firm that specializes in going "beyond the surface" to provide deep insight across the full spectrum of IT management technologies. EMA analysts leverage a unique combination of practical experience, insight into industry best practices, and in-depth knowledge of current and planned vendor solutions to help its clients achieve their goals. Learn more about EMA research, analysis, and consulting services for enterprise IT professionals and IT vendors at [www.enterprisemanagement.com](http://www.enterprisemanagement.com) or follow EMA on Twitter ([http://twitter.com/ema\\_research](http://twitter.com/ema_research)).

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