



Technology Focus

SolarWinds & Virtualisation

Orion Core Product provides the following VMware monitoring

- Monitor VMware® ESX host servers and guest virtual machine instances
- Track virtual machine (VM) availability and performance, including key metrics such as CPU, memory, disk space, and network bandwidth
- Monitor key VirtualCenter statistics to ensure that your virtualization environment is running smoothly
- Automatically discover, identify, and monitor new virtual machines added to any VMware ESX Server
- Leverage out-of-the-box VM reports
- Maintain VM performance using built-in alerts to receive instant notification of VM-related issues

Orion Network Performance Monitor (NPM) provides deep visibility into virtualization environments to monitor virtual machine availability and performance. With Orion NPM, you can monitor VMware ESX Servers, as well as guest virtual machine instances.

VMware Virtualization Monitoring

Orion NPM communicates directly with VMware ESX Servers to determine how the host ESX Server is performing and to gauge the health of individual virtual machines. Orion NPM reads host MIB information from each VMware ESX Server and its corresponding virtual machines, detailing statistics such as CPU and memory utilization, disk usage, guest OS, network usage, and much more.

By monitoring specific virtual resources, Orion NPM can alert you to a virtual machine that is using excessive CPU resources or is approaching its allocated memory limit. This enables you to ensure that applications are performing well and that the virtual and physical resources on the server are optimized.

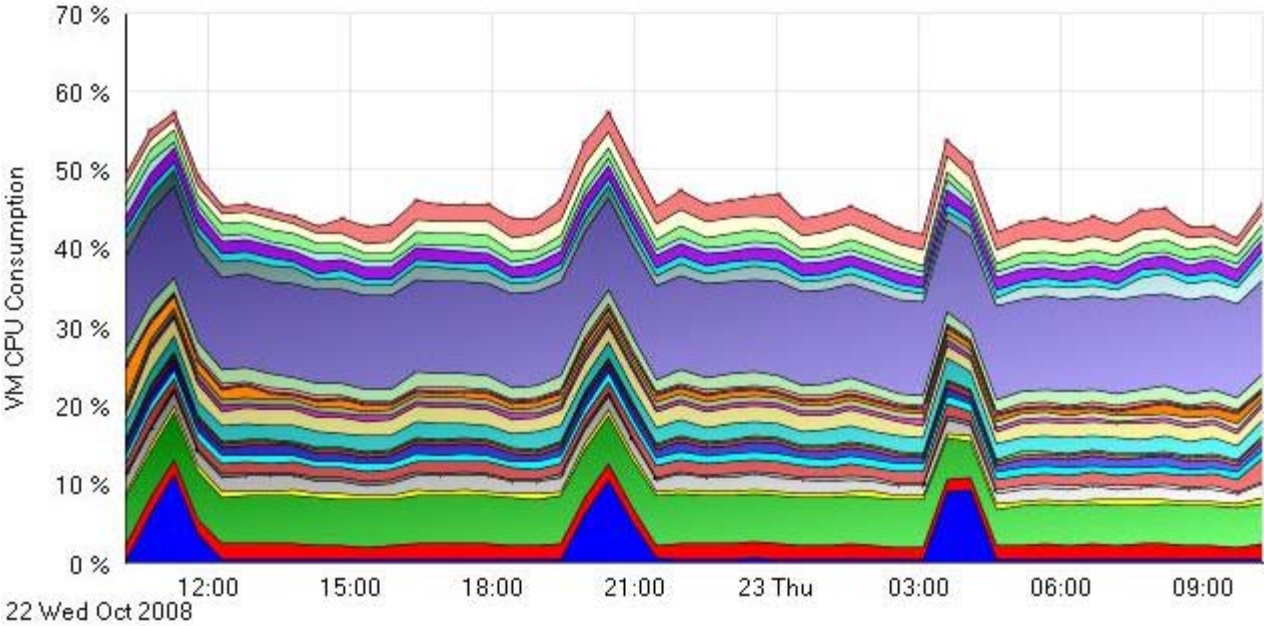


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List of Virtual Machines HELP						
NAME	OPERATING SYSTEM	STATE	MEMORY SIZE	CPU SHARES	IP ADDRESS	
lab-vm01-texcluster2	Windows Server 2003, Std. (32-bit)	Running	1.0 GB	10.00%		
lab-vm01-texEX03	Windows Server 2003, Ent. (32-bit)	Not Running	0 B	0.00%		
lab-vm01-texDC	Windows Server 2003, Std. (64-bit)	Running	1.0 GB	10.00%		
lab-vm01-tex08x64	Windows Server 2008 (64-bit)	Running	1.0 GB	10.00%		
Lab-VM01-1x32	Windows Server 2003, Std. (32-bit)	Running	1.0 GB	10.00%		
lab-vm01-tex08	Windows Server 2008 (32-bit)	Running	1.0 GB	10.00%		
License	Windows Server 2003, Ent. (32-bit)	Running	1.0 GB	10.00%		
lab-vm01-texcluster1	Windows Server 2003, Std. (32-bit)	Running	1.0 GB	10.00%		
lab-vm01-texEX07	Windows Server 2003, Ent. (64-bit)	Running	1.0 GB	10.00%		
lab-vm01-texSQL	Windows Server 2003, Ent. (32-bit)	Running	1.0 GB	10.00%		
lab-vm01-vista	Windows Vista (32-bit)	Not Running	1.5 GB	10.00%		

The image below shows a graph of virtual machines and their CPU usage for a particular ESX server. The same type of reporting is also available for the memory and network traffic used per VM.





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The Universal Poller in Orion gives you the possibility to monitor anything available in a MIB database of a virtual machine ***See end of this document for the OIDs for the VMware MIB.*** As long as you know the OID you can poll this for it's value.

<http://www.oidview.com/mibs/6876/VMWARE-VMINFO-MIB.html>

VMware VirtualCenter Monitoring

In addition to monitoring VMware ESX Servers and the associated virtual machines, Orion NPM also monitors key performance statistics on the VMware VirtualCenter Server. Gaining insight into the performance and availability of VirtualCenter is a critical component to ensuring that your virtualization environment is running smoothly.

Virtualization Monitoring using Orion Application Performance Monitor

Orion NPM leverages the optional Orion Application Performance Monitor (APM) module to monitor application and server information running on virtual machines. Orion APM monitors end-user experiences against web applications to check and verify the response time of HTML pages and monitors any port on the network.

Virtualization Monitors available in the application monitor

- Microsoft Hyper-V™
- VMware® ESX
- VMware® VirtualCenter
- Citrix XenServer™

Many network engineers use end-user experience response time monitoring to ensure that end users are not impacted when applications move from physical servers to virtual ones. Orion APM recognizes virtual machines seamlessly, delivering application performance monitoring for business-critical services, including Microsoft® Exchange, Lotus® Notes, SAP®, Apache®, Active Directory®, Microsoft IIS, SQL Server, and much more.

ESX Virtual Machine Auto-summary

Orion NPM automatically discovers new virtual machines added to any VMware ESX host server. When virtual resources are constantly moving, it is critical to have near real-time information about how resources are allocated to determine the best possible configuration. In addition to detailed virtual machine statistics, ***Orion NPM also leverages the Orion NetFlow Traffic Analyzer (NTA) module to analyze the traffic to or from any virtual machine*** communicating on the network, providing visibility into how network traffic is behaving.



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Alerting and Reporting with Virtualization

Orion NPM's native alerting and reporting capabilities seamlessly extend to virtual machines. With just a few clicks, alert thresholds can be set up for virtual machines, such as notification when memory usage approaches its maximum allocation. Additionally, custom reports can easily be created to detail virtual machine activity over any period of time. These reports serve as valuable resources for capacity planning, future infrastructure changes, or measuring virtualization efficiency.

Free Tools for Virtualisation Monitoring

SolarWinds free VM Monitor is an ingenious desktop tool that continuously monitors a VMware® ESX Server and its virtual machines, delivering the real-time virtualization monitoring that you've been missing. With VM Monitor at your fingertips, you'll be able to track virtualization health at-a-glance and ensure your mission-critical apps never fail you.

SolarWinds free VM Monitor makes it easy to:

- Quickly check the health of your VMware ESX Server by monitoring CPU, memory utilization, number of virtual machines configured and running, and much more
- View detailed individual virtual machine health statistics including VM name, guest OS, and VM state, as well as processor, memory, and network usage
- Leverage best practice thresholds to begin monitoring virtualized servers right out-of-the-box
- Prevent performance degradation by watching threshold-specific indicators to visually alert you when problems occur

* SolarWinds VM Monitor only supports monitoring of VMware ESX servers; the tool currently does not support VMware ESXi, since ESXi does not support SNMP queries



Statistics for MIB VMWARE-VMINFO-MIB:

vmwVirtMachines	1.3.6.1.4.1.6876.2	OBJECT IDENTIFIER
vmTable	1.3.6.1.4.1.6876.2.1	OBJECT-TYPE
vmEntry	1.3.6.1.4.1.6876.2.1.1	OBJECT-TYPE
vmIdx	1.3.6.1.4.1.6876.2.1.1.1	OBJECT-TYPE
vmDisplayName	1.3.6.1.4.1.6876.2.1.1.2	OBJECT-TYPE
vmConfigFile	1.3.6.1.4.1.6876.2.1.1.3	OBJECT-TYPE
vmGuestOS	1.3.6.1.4.1.6876.2.1.1.4	OBJECT-TYPE
vmMemSize	1.3.6.1.4.1.6876.2.1.1.5	OBJECT-TYPE
vmState	1.3.6.1.4.1.6876.2.1.1.6	OBJECT-TYPE
vmVMID	1.3.6.1.4.1.6876.2.1.1.7	OBJECT-TYPE
vmGuestState	1.3.6.1.4.1.6876.2.1.1.8	OBJECT-TYPE
hbaTable	1.3.6.1.4.1.6876.2.2	OBJECT-TYPE
hbaEntry	1.3.6.1.4.1.6876.2.2.1	OBJECT-TYPE
hbaVmIdx	1.3.6.1.4.1.6876.2.2.1.1	OBJECT-TYPE
hbaldx	1.3.6.1.4.1.6876.2.2.1.2	OBJECT-TYPE
hbaNum	1.3.6.1.4.1.6876.2.2.1.3	OBJECT-TYPE
hbaVirtDev	1.3.6.1.4.1.6876.2.2.1.4	OBJECT-TYPE
hbaTgtTable	1.3.6.1.4.1.6876.2.3	OBJECT-TYPE
hbaTgtEntry	1.3.6.1.4.1.6876.2.3.1	OBJECT-TYPE
hbaTgtVmIdx	1.3.6.1.4.1.6876.2.3.1.1	OBJECT-TYPE
hbaTgtIdx	1.3.6.1.4.1.6876.2.3.1.2	OBJECT-TYPE
hbaTgtNum	1.3.6.1.4.1.6876.2.3.1.3	OBJECT-TYPE
netTable	1.3.6.1.4.1.6876.2.4	OBJECT-TYPE
netEntry	1.3.6.1.4.1.6876.2.4.1	OBJECT-TYPE
netVmIdx	1.3.6.1.4.1.6876.2.4.1.1	OBJECT-TYPE
netIdx	1.3.6.1.4.1.6876.2.4.1.2	OBJECT-TYPE
netNum	1.3.6.1.4.1.6876.2.4.1.3	OBJECT-TYPE
netName	1.3.6.1.4.1.6876.2.4.1.4	OBJECT-TYPE
netConnType	1.3.6.1.4.1.6876.2.4.1.5	OBJECT-TYPE
floppyTable	1.3.6.1.4.1.6876.2.5	OBJECT-TYPE
floppyEntry	1.3.6.1.4.1.6876.2.5.1	OBJECT-TYPE
fdVmIdx	1.3.6.1.4.1.6876.2.5.1.1	OBJECT-TYPE
fdIdx	1.3.6.1.4.1.6876.2.5.1.2	OBJECT-TYPE
fdName	1.3.6.1.4.1.6876.2.5.1.3	OBJECT-TYPE
fdConnected	1.3.6.1.4.1.6876.2.5.1.4	OBJECT-TYPE
cdromTable	1.3.6.1.4.1.6876.2.6	OBJECT-TYPE
cdromEntry	1.3.6.1.4.1.6876.2.6.1	OBJECT-TYPE
cdVmIdx	1.3.6.1.4.1.6876.2.6.1.1	OBJECT-TYPE
cdromIdx	1.3.6.1.4.1.6876.2.6.1.2	OBJECT-TYPE
cdromName	1.3.6.1.4.1.6876.2.6.1.3	OBJECT-TYPE
cdromConnected	1.3.6.1.4.1.6876.2.6.1.4	OBJECT-TYPE