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## THE WHOLE PICTURE

We tested five system-performance managers. Quest's full-featured Foglight edged out HP OpenView in illuminating—and helping control—problems.

By Sean Doherty

» Remember when system-performance problems were solved with a checkbook? Buying more, better and faster computers fixed many of our biggest woes—even some we didn't know we had. Those days are long gone.

But performance problems persist, especially in today's complex systems, which must keep track of interconnected devices and support more applications than ever before. As the problems get more difficult to pinpoint, the need for automated system-performance managers grows more acute.

System-performance managers distribute agents to computer systems within the enterprise. Each agent is platform-specific—a Microsoft Windows 2000/2003 agent won't run on Unix, and vice versa. Parasitic in nature, the agents feed off operating systems and applications. At regular intervals, they collect and condense

performance data and communicate it to a central console. The central console processes, archives and reports on data in logical views that both technical and nontechnical staffers can use.

Performance data can help your enterprise get to the root cause of problems. Over time, this data also can help you define

thresholds for critical services, so that alerts are sent or automated actions are taken when your thresholds are exceeded. Historical data may even help justify a new server acquisition or outsourcing a service. Some tools, like BMC Software's Predict, can foresee how various system configurations will affect your operations.

But let's not put the cart before the horse. Before you can leverage performance data, you must monitor and collect it.

System-performance monitoring is not a singular activity, even if you have only one computer system. It involves the operating system and multiple applications and how they affect valuable IT resources like processors, memory, storage and the network. To understand how systems affect these resources, get a grip on throughput, queue and response time. These terms describe system-resource usage from the inside out.

High thresholds and long queues translate to reduced workloads for your technical people. But this information may not impress the company execs. Being end users themselves, they tend to focus instead on slow response times—a problem that can reduce sales. It's no wonder, then, that vendors continue to offer products that measure performance-response time from the outside in (see "Monitoring System Performance From the Outside In,").

### Measuring the Managers

We looked for system-performance managers that could monitor and manage our NWC Inc. 24/7 production environment in



Green Bay, Wis., from our Real-World Labs® at Syracuse University. The original design for this review called for managers that could remotely monitor Windows 2000 and Linux Red Hat servers. On the Windows side, we required support for IBM WebSphere 4.0.1., Microsoft IIS 5.0 (.Net) and Microsoft SQL Server 2000. Under Linux, we required support for Apache 1.3.22 and MySQL 3.23.41.

We sent invitations to nine vendors. BMC Software, Heroix Corp., Hewlett-Packard, NetIQ and Quest Software responded enthusiastically and planned to visit Syracuse, as their business models dictated installation support for enterprise customers. But Candle, Computer Associates, IBM (Tivoli) and Micromuse opted out because they were planning to release new products during the course of our testing.

And to our surprise, our Green Bay lab also opted out, because of technical difficulties with our ISP. This shifted the entire weight of the review to our Syracuse University lab in midstream. Our participants took it in stride, but we had to adjust our original requirement.

There's something for everyone among the products we tested. Looking at the prices, you would think that HP drove up in a Cadillac, with BMC, NetIQ and Quest following in Volvos and Heroix trailing in a VW van. But each one of these vendors can supply you with products to help manage your enterprise systems and get optimal performance out of your network. Your budget and needs in light of the features and functions of these products will dictate your solution.

For us, Quest's Foglight 4 edged out HP OpenView for Windows (with performance management) to win our Editor's Choice award. Had price been no object, HP would have taken the top spot.

Both Foglight and HP OpenView provided consistent system-performance management across our test bed. Foglight delivered both Windows and Linux agents to servers remotely, and had better out-of-the-box reporting than HP OpenView. Although OpenView gathered and used more performance metrics than other participants, it lacked an automatic installer for Linux, and without HP Reporter, it couldn't configure reports and export the data to alternative formats like CSV or PDF files.

With the exception of Heroix's eQ, each product we tested supports distributed administration to set up multiple roles for monitoring. And all the products identified the resource problems we created in the test bed.

And no one came up short on metrics or rules for managed objects during operations testing. But we also judged on application (agent installation, configuration) and delivery (reporting). Quest's Foglight won the day with a consistent all-around performance in day-to-day operations, configuration and reporting.

NetIQ's AppManager followed HP with solid systems performance, offering strong event and fault management at a good price. BMC's Perform and Perceive suffered from its lack of message management and automatic actions for the wealth of events and alerts it can generate. Although BMC added Patrol Central to its submission, that product focused on the vendor's WebSphere Knowledge Module and was not used as a console for performance data.

We hadn't planned on judging the Web consoles available for system-performance management, but we couldn't help ourselves.

In general, the Web consoles are offered as an alternative to Microsoft Management Console (MMC) or Windows to view critical messages and get an overview of system performance. These basics were available from HP, Heroix and NetIQ, which all leveraged IIS. BMC raised our eyebrows with its installation of Apache Tomcat, which sported configurable report generation and drill-down reporting. But Foglight (Apache) took the honor with the best Web site to view messages and reports.



**Quest Software Foglight 4, Foglight WebSphere Cart-ridge, Spotlight on Windows/Unix Quest's Foglight is a full-featured event-reporting**

and management application with system- and application-performance monitoring. It came close to matching HP OpenView's fault and message management, but did not win out in system-performance monitoring and setting alerts. Nevertheless, Foglight merited our Editor's Choice award. Its pricing was good, and we were pleased that it distributed both Windows and Linux agents from the central console. And like BMC's offering, Foglight included configurable report generation. It also provided the best Web interface for monitoring and management.

Unlike Heroix's and NetIQ's products, Foglight didn't require MS SQL 2000 during installation. Instead, it relied on a proprietary database. But Foglight's Operations Console called for a Java Runtime Environment (SE 1.4.2\_01).

The Java console was snappy, letting us draw a map of our environment by IP address. It could also draw custom maps to identify computers by cities, subnets and hosts. We stuck with what we knew best: IP maps.

We remotely installed agents for both Windows and Unix

## Executive Summary

# SYSTEM-PERFORMANCE MANAGEMENT

Think of system-performance managers as spy masters. They deploy agents on your network nodes that feed performance data back to home base. That data can then be rolled into useful reports to pinpoint problem spots (whether you'll gather enough dirt to justify a pre-emptive war on your Windows 98 machines all depends on your spin power).

We gathered products from BMC Software, Heroix Corp., Hewlett-Packard, NetIQ and Quest Software in our Syracuse University Real-World Labs® and sent them a spying. Any of the managers we tested will help you squeeze the most out of your systems; you'll have to weigh your needs against a variety of feature sets and pricing models—some of them hefty. This time, Quest's well-rounded Foglight 4 took top spot thanks to its glowing out-of-the-box performance and Linux support. HP was hot on Foglight's trail but was thrown off by OpenView's high price.

computers from the Foglight central console. An install wizard walked us through a discovery of computers on the network; it allowed input for authentication information, target directory for the client and the port number to use (5150 default). Following configuration, an installation summary opened up to give us detailed information about the connection and the installation.

Foglight's event management is on par with OpenView's. The operations console can act as the central repository for all events affecting systems performance, which the IP map lets you view in a top-down fashion. All events for the network can be viewed by highlighting the network; events by subnet can be displayed by highlighting the subnet object.

Highlighting a subnet will give you the events for all the computers on the subnet. The same holds true when you click on a subnet object. But you can't create filters or views to limit the number of messages you receive, or collapse duplicate messages into message threads—tasks you can perform with OpenView and NetIQ.

The famous right-click in the MMC console continues with Foglight. Using this method, we could edit the message to take an automated action. The text of the message is much less busy than with OpenView.

With Foglight, we could send an e-mail or issue an agent command to start, restart or stop a service. We could also issue a remote exec command or send an SNMP trap.

Diagnosing an event in Foglight brings up Spotlight on Windows or Unix. This feature gets our "cool tool" award hands down. Spotlight uses metrics, thresholds and severity levels to alert the viewer in a Java-based GUI. It gets its information from Windows performance counters and the registry, so we needed to

authenticate to a system with administrator privileges. For Linux, it uses *ifconfig*, *df* and *iostat* to gather data. Metric properties such as thresholds and alerts can be changed with the Metric Editor.

By default, the display quickly alerted us to a bottleneck. Where we saw red, we could drill down into the display to view problem resources that were flagged.

The Foglight Cartridge for WebSphere had the most intrusive installation setup of the products tested. It went beyond simply installing a management object on the WebSphere 5 server.

Quest monitoring code is run in each JVM (Java Virtual Machine), so it needs to be installed as an application in WebSphere. The monitoring code communicates with the operations console via HTTP. This information, along with WebSphere PMI (Performance Monitoring Infrastructure), is obtained and inserted directly into the tables and views available at the operations console. More than 40 metrics, from Java Bean usage to Garbage Collection data, are provided. In addition, the Cartridge is used by Quest's PerformaSure product. Although we didn't test PerformaSure, we installed it to find an in-depth application performance monitoring solution with response-time metrics.

From the Foglight perspective, we installed agents to obtain information from managed objects. Like the other products we tested, Foglight has agents to support NT and Linux. There are 24 views or standard reports for NT and 45 for Linux systems. These default views are extensive but not as deep as OpenView's. But Foglight's out-of-the-box reporting is sweet.

Double-clicking on a view produces a graphical chart that dis-



## REAL-WORLD LABS REPORT CARD System-Performance Managers

	Quest Foglight	Hewlett-Packard HP OpenView for Windows	NetIQ AppManager Suite 5.0.1	BMC Patrol Perform and Perceive, Patrol Central	Heroix eQ 2.1.26
<b>OPERATIONS (PERFORMANCE)</b>					
Event/fault monitoring (10%)	4.5	5	4.3	4	2
Message management (10%)	4	5	4.3	3	2
Performance monitoring (10%)	4.5	5	4	4.5	4
Agent deployment (10%)	5	4.3	4.3	4	4.5
<b>CONFIGURATION</b>					
Alert/event notification (10%)	4.5	4.5	4.5	4	3
Automated actions (10%)	4.5	4.5	4	1	3
Job scheduling (10%)	4.5	4.5	4.5	4	4
<b>REPORTS</b>					
Standard (10%)	4.5	4	4	4.5	3
Configurable (10%)	4.5	4	3.5	4.5	3
<b>PRICE (10%)</b>	<b>3.75</b>	<b>2</b>	<b>4</b>	<b>4.75</b>	<b>5</b>
<b>TOTAL SCORE (100%)</b>	<b>4.43</b>	<b>4.28</b>	<b>4.14</b>	<b>3.83</b>	<b>3.35</b>

A≥4.3, B≥3.5, C≥2.5, D≥1.5, F<1.5  
A-C GRADES INCLUDE + OR - IN THEIR RANGES. TOTAL SCORES AND WEIGHTED SCORES ARE BASED ON A SCALE OF 0-5.

A<sup>-</sup>

B<sup>+</sup>

B<sup>+</sup>

B

C<sup>+</sup>

**EVENT/FAULT MONITORING** refers to the central console, which correlates events related to system performance.

**MESSAGE MANAGEMENT** includes features for editing, manipulating and managing large volumes of data.

**JOB SCHEDULING** refers to intervals of time when rules and policies are effective.

Customize the results of this report card using the Interactive Report Card®, a Java applet, at [www.nwc.com](http://www.nwc.com).



Quest's Spotlight for both Windows and Unix gives you a dashboard view of the critical metrics for server health. Here, Spotlight highlights a problem with our Linux server under testing, with paging and unusual disk activity.

plays metrics for such items as processors memory and disk. We could change the chart to various types (bar graph, line or pie chart) and set the display to various time increments (real time, last hour, last four hours and so forth). By double-clicking on the

graph, we could view the underlying data. We could also create a report with a print preview of the graphics and data.

We could send the output to a printer or export it to HTML or PDF. There was even an option to e-mail the report using the default SMTP mailer we had configured during installation.

Like OpenView and NetIQ, Foglight sports an Apache agent for Unix out of the box. To get started, we had to edit the agent start-up parameters and change the default path to `/usr/local/apache`. But once these tasks were done, the Apache agent could report metrics ranging from server availability to hit rates, transactions and throughput.

Foglight 4, Foglight WebSphere Cartridge, Spotlight on Windows/Unix. Quest Software, (800) 306-9329. [www.quest.com](http://www.quest.com)



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## System Performance Management Features

	BMC Patrol Perform and Perceive, Patrol Central	Heroix eQ 2.1.26	Hewlett-Packard OpenView for Windows	NetIQ AppManager Suite 5.0.1	Quest Foglight
<b>Central Console</b>					
Console operation	MMC, Web	MMC, Web	MMC, Web	MMC, Windows, Web	Java, Web
Console platform	Windows, Unix	Windows	Windows 2000	Windows	Windows, Solaris
Computer discovery	Y	N	Y	N	Y
Distributed user administration	Y (Patrol Central)	Y (Web management console only)	Y	Y	Y
Version control for managed objects	N	N	Y	Y	N
Application response-time metrics	N	Y	Y	Y	Y
Configurable reports	Y	Y	N	Y	Y
Automated reports	Y	Y	Y	Y	Y
SNMP monitoring	Y	Y	Y	Y	Y
ARM support	Y	N	Y	N	N
Blackout period for rules/policies	Y (Patrol for Websphere)	N	N	Y	Y
<b>Agents</b>					
Remote client installation (Windows/Unix)	N/N (Perform/Perceive agents)	Y/Y	Y/N	Y/N	Y/Y
Encrypted agent/console communications	N	N	N	Y	Y
Windows disk usage (MB)	227	19	70	28	85
Windows memory usage (bytes)	1,806,336	573,440	1,241,992	1,683,456	1,454,060
Linux disk usage (MB)	132	16	92	88	29
Linux memory usage (KB/percent)*	8,563/0.3	20,288/0.8	46,341/2.5	34,840/1.6	24,708/1
<b>Console data repository</b>					
Oracle	Y	N	N	N	N (proprietary databases)
Microsoft SQL	Y	Y	Y	Y	N (proprietary databases)
<b>Price</b>	<b>\$7,295</b>	<b>\$4,230</b>	<b>\$31,955</b>	<b>\$10,030</b>	<b>\$14,315</b>

Y=Yes, N=No \*Resident set size for sleeping agents and percent of total memory used (2,048 MB)