

## The Ten Features Your Web Application Monitoring Software *Must* Have

### Executive Summary

*It's hard to find an important business application that doesn't have a web-based version available—and for good reason. By deploying business critical applications to employees, customers, and business partners over the web, companies have created new revenue opportunities and cost savings.*

*However, web-based applications and the underlying infrastructure can be very complex and involve a wide range of servers, networks, databases, operating systems, and third-party web services. Keeping these web-based applications running with acceptable performance presents a challenge to the IT teams responsible for them. Real-time performance monitoring is at the heart of ensuring that these systems deliver the results expected from the investment they require.*

*This white paper discusses the challenges facing IT organizations in today's web-enabled world and the need for a new web application monitoring approach that gives IT teams the ability to track performance from both the end-user perspective and at a detailed infrastructure level. To help IT managers evaluate solutions, this paper lists [ten vitally important features](#) that should be considered when evaluating web performance tools. By using innovative monitoring software tools that offer early notification of potential problems and the ability to solve them before they impact business operations, IT is positioned to truly support the business in real time to ensure profitability and productivity goals are achieved.*

## **When Performance Means Business**

Web-based applications have created tremendous opportunities for business. In fact, most important business functions are now automated and made available via web-based applications, intranets, and extranets. The ease of deploying these solutions to employees, customers, and business partners around the world has opened up new revenue sources and business opportunities for companies of all sizes. However, what's been good for business has presented new IT challenges, particularly in the areas of performance and availability. In the web-enabled business world, unplanned downtime and poor response times have a direct impact on profitability and productivity.

## **IT Challenges in a Web-enabled World**

To ensure the 24/7 availability and performance of global, web-based business functions, IT staff face three significant challenges: managing a more complex environment, working effectively with limited resources, and diagnosing and addressing problems in real time.

### *Complexity*

In today's interconnected IT environments, web-based applications and the underlying infrastructure are very complex and involve a wide range of servers, databases, and operating systems. In addition, many web-based applications use third-party web services to perform critical functions, such as data validation, sales tax calculation, and shipping services. To complicate matters even further, these disparate applications are very likely connected using networks and infrastructure that you don't own or control.

### *Limited Resources*

IT is expected to keep a close watch over these business-critical applications, infrastructures, and third-party service dependencies—and be ready to resolve issues before they impact the end user. The reality is quite different. IT staffs live in a “do more with less” world where inadequate time, resources, and tools often lead to a constant state of firefighting. As such, proactive monitoring—and the time, effort, and expense it requires to achieve it—may seem out of reach to many IT departments.

### *Inadequate Diagnostic Tools*

Unfortunately, without quantitative, real-time, proactive monitoring tools, end user complaints of “it’s down,” “it’s slow,” and “it’s broken” make troubleshooting a real challenge. And, that lack of hard data for fast, effective problem diagnosis and resolution can greatly extend downtime—which, in turn, negatively impacts business operations and the company’s bottom line.

### **Performance Monitoring Tools—What’s Out There?**

Real-time performance monitoring ensures that the investment in developing and deploying business-critical, web-based applications delivers the anticipated results. Vendors large and small have offerings aimed at monitoring individual components of the infrastructure, such as the network, specific vendor web-based applications, and servers.

- *Network:* Network-centric monitoring tools collect detailed data on packets and traffic utilization versus capacity. However, they don’t offer much insight into application performance or the end-user experience.
- *Applications:* Application-centric monitoring tools rely on the deployment of agents that capture and report performance statistics back to a central server. This approach provides a good view into the user’s experience within the application, but can’t pinpoint problems that originate outside the application.
- *Servers:* Software tools that report on server-specific statistics, such as CPU, memory, and disk utilization, can keep a close eye on the nuts and bolts of the hardware. But, they do little in the way of monitoring the end user’s experience completing a transaction from start to finish.

Creating a comprehensive performance monitoring solution from individual point products is even more challenging due to widely varying vendor approaches. For example, companies that focus on web-application monitoring often tout their ability to monitor a website from many points-of-presence around the world, which facilitates the ability to compare response times from different locations. While this insight may prove interesting, creating it can significantly increase monitoring costs. Therefore, the real question is “Is the cost of developing this information worth the value it brings? After all, can you really do anything to increase the performance of the Internet in Dubai?”

## Taking a New Approach: Ten Features Your Performance Monitoring Software *Must Have*

A “mix and match” approach to performance monitoring using point solutions is not ideal. What’s needed is a comprehensive toolset that continuously monitors the performance and availability of your website, web-based applications, servers, and infrastructure. A solution that allows system administrators and other IT staff to proactively monitor critical applications for potential problems and take action well before a problem is apparent to the end user. Such advanced web application performance monitoring software navigates the complexity of today’s infrastructure, yet remains easy to use and implement—and offers a fast return on investment (ROI).

Following are ten key features to look for when selecting performance monitoring software for a web-enabled environment.

1. ***Real-time, end-to-end, end-user view of performance.*** Real-time knowledge of the application’s response from an end user’s perspective can be achieved by monitoring the end-to-end sequence of steps typically followed by a user completing a transaction. This allows you to measure and tune the performance of the application and ensures that productivity and revenue goals are being met.

Transaction monitoring is best accomplished by actively generating a transaction against the live system, recording the response time of each element and the transaction overall, and validating the content returned. Gaining visibility into patterns of poor response times after the fact can be helpful when it comes to spotting trends or trying to determine if an upgrade in network or hardware capacity is necessary. However, it can’t compare to the ability to detect and repair problems before end users feel the impact.

2. ***Visibility into complex web-based applications and the underlying infrastructure.***

Enterprise web applications often depend on resources external to the web server, including network and database resources and third-party web services. In-depth monitoring of each supporting infrastructure component is needed to pinpoint existing and potential application, infrastructure, and network problems. This includes event and error notification for all TCP/IP or IP based services and devices, such as servers, databases, network routers, email, FTP, and DNS servers.

3. ***Ability to detect problems before they impact the end user.*** Watch failures, error conditions, and response time thresholds should be individually configurable for each of the infrastructure components monitored. Having the flexibility to set thresholds at different levels of sensitivity allows the administrator to keep a close eye on areas of suspected trouble and receive early alerts to potential conditions of concern—before end users start calling.

4. ***Immediate alerts to outages and detailed information to quickly pinpoint the root cause and shorten troubleshooting and resolution times.*** Alerts should include configurable and detailed information about the conditions that caused the alert, including the error codes returned, actual output, log entries, and trace routes to pinpoint the exact location of the device triggering the alert. Ideally, monitoring software also provides the ability to execute commands, such as restart a process, launch an executable, or reboot the server, which saves time in resolving problems and lessens the impact on end users.
5. ***Ability to function in a complex environment with a diverse mix of servers, databases, and web service providers.*** For static sites that do not use a database or have dynamic content, simply monitoring the most trafficked pages may provide an adequate defense against issues that affect uptime. However, for dynamic sites, each component should be monitored using the industry-standard protocol that's appropriate to the specific device. For example, servers should not only be monitored for the standard CPU, disk usage, and memory statistics, but also for specific occurrences of errors and potential problems in processes and event logs.

Advanced monitoring tools take advantage of SNMP (Simple Network Management Protocol) commands to monitor deeply into the infrastructure. Databases should be monitored to ensure that they accept connections, execute queries, and return expected results. Finally, the entire web page should be monitored for a cumulative view of availability and uptime.

6. ***Visibility into networks and infrastructure that aren't under your control.*** Several vendors offer agent-based tools that require the installation of agents on the remote application servers being monitored. These agents collect and send performance data to a central monitoring server. However installing agents on servers you don't control can be difficult at best. And, these remote agents require maintenance, which adds complexity to the deployment and ongoing management of the monitoring solution.

Agentless solutions that use industry standard protocol to directly connect, query, post, or otherwise simulate user activity and performance statistics are transparent to the supporting infrastructure and provide accurate statistics—without adding overhead or additional maintenance.

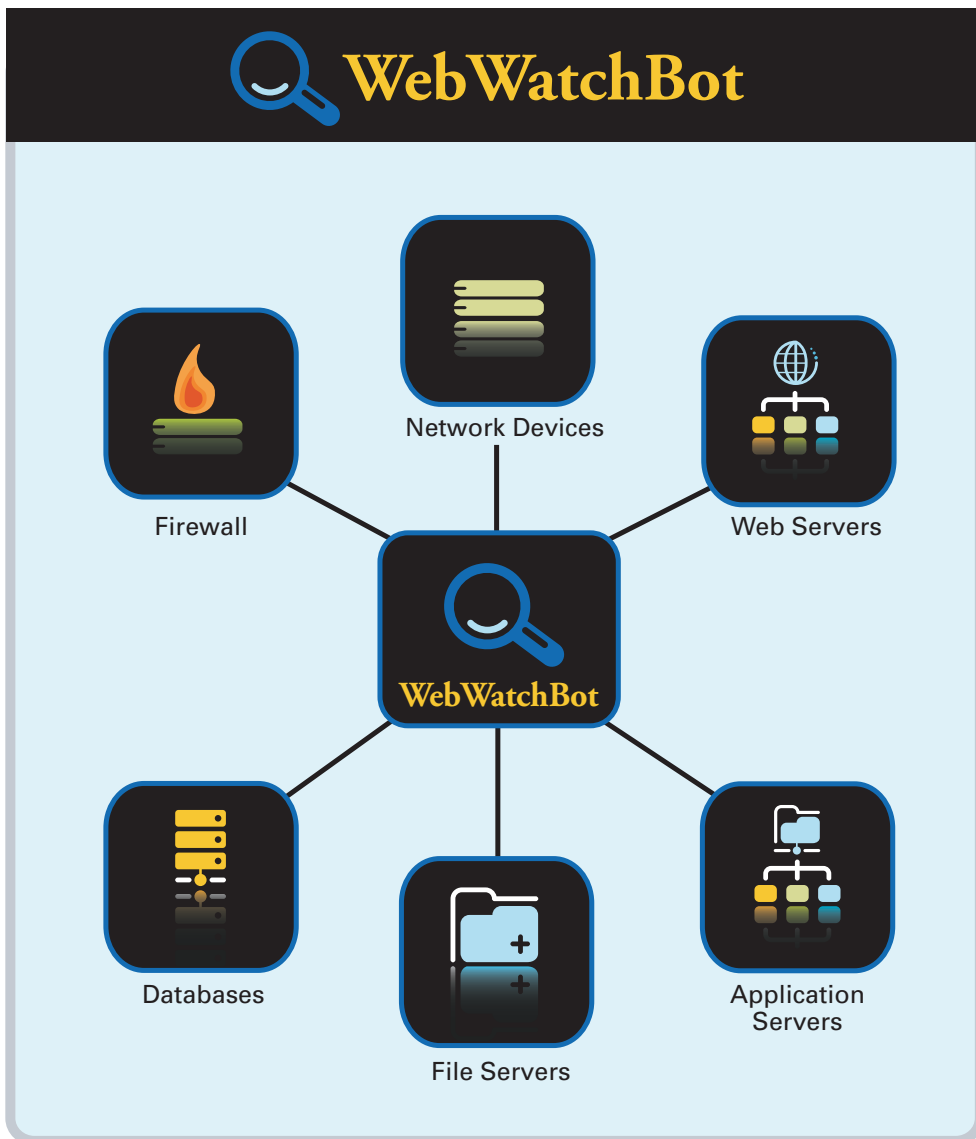
7. ***Flexibility to quickly implement new monitoring targets as business priorities change.***  
Nothing in business is constant except change. New applications and the corresponding infrastructure must come online quickly as changing business priorities can lead to an immediate demand for a new monitoring target. Therefore, the flexibility to directly interface with the management console to easily add, change, or suspend a watch item is critically important. In addition, the ability to switch a watch item to “maintenance” status in real time helps to preserve the accuracy of service level agreement (SLA) reports and uptime statistics.
8. ***Easy implementation without a steep learning curve.*** Implementation of a monitoring solution should not take weeks of setup and heavy vendor technical support. Setting up complex web transaction watch items should be facilitated with easy-to-use transaction recorders, which allow you to follow the steps taken by a typical user during a specific transaction, record the pages, and create a watch item that simulates a real user each time it’s executed. In addition, advanced monitoring software should have a familiar, intuitive user interface and require little formal training.
9. ***Management-friendly reporting showing performance trends, outage statistics, and SLA compliance.*** The ideal monitoring tool produces useful reports showing real-time performance and historical trends, outage statistics, SLA compliance breaches, and other information in a set of management-friendly reports and corresponding detailed reports for the technical team.
10. ***Immediate ROI on monitoring software investment.*** “Enterprise monitoring solutions” can cost up to \$50,000 and take weeks to implement—placing them out of reach for all but the largest companies. The most advanced performance monitoring vendors offer solutions that encompass the features discussed above for a fraction of the cost and effort required for traditional tools.

## WebWatchBot 5.0 – Advanced and Affordable

WebWatchBot 5.0 is advanced, affordable performance monitoring software that gives IT teams a centralized ability to monitor and track the performance of web applications and the supporting IT infrastructure. It has the unique ability to monitor application performance from the end-user perspective while simultaneously monitoring the underlying servers, operating systems, network devices, and databases supporting the infrastructure. WebWatchBot 5.0 gives IT teams the tools needed for early notification of potential problems and the ability to solve them before business operations are impacted—without the need to install agents or other software on production systems.

### How WebWatchBot 5.0 Works

WebWatchBot is installed on a Microsoft Windows™ server with network connectivity to the infrastructure being monitored. However, because WebWatchBot is an agentless monitoring tool, nothing is installed on the servers or network components being monitored. The WebWatchBot server can be located inside or outside the enterprise firewall. In some instances, where the web application uses a complex architecture with load balancing and multiple application servers, a second WebWatchBot implementation may be recommended to monitor these components separately and correlate performance statistics against the end-user view of performance.



### Monitoring Types for Web-based Applications, Intranets, and Extranets

WebWatchBot supports more than 20 different monitoring types, including the ability to define custom monitors and watch items. The following table reviews the software's monitoring capabilities in a number of key areas:

<b>Transactions</b>	WebWatchBot monitors the sequence of steps taken by an end user of the web application, website, and/or intranet, including logging into an application, selecting an account, viewing data, posting data to a form, using a shopping cart, and logging out.
<b>Recorder</b>	The Recorder allows the administrator to easily create a complex but typical user transaction as a watch item. Using the Recorder, administrators simply follow the desired sequence of user steps and save this recording as a watch item to be replayed by WebWatchBot during the monitoring process.
<b>HTTP/HTTPS</b>	WebWatchBot verifies that a specified URL is available and responding within a defined threshold. It can download the content from a specified URL and verify that specific content strings are found. Web form monitoring is accomplished by automatically submitting form data to simulate user actions. In addition, the software provides easy configuration of dynamic URLs, session ids, and other parameters.
<b>Databases</b>	WebWatchBot monitors all major databases by connecting, executing a query, and searching results for specified text.
<b>Servers</b>	<p>Ensuring that complex web applications and websites are running properly requires keeping a constant eye on a wide range of servers and support infrastructure, such as email servers, DNS servers, and routers. WebWatchBot provides a wealth of monitoring items, including:</p> <ul style="list-style-type: none"> <li>• Ping: queries any IP device that allows ping over TCP/IP</li> <li>• Port: connects to a server via a URL or IP address and specified port number to verify availability and response time</li> <li>• SMTP (Outgoing Email Servers): monitors outgoing email servers and user accounts for availability and performance</li> <li>• POP3 (Incoming Email Servers): monitors incoming email servers and user accounts for availability and performance</li> <li>• FTP: logs in and verifies that a file can be uploaded to, or downloaded from, an FTP server</li> </ul>

*continued*



*Monitoring Types continued*

	<ul style="list-style-type: none"> <li>• DNS: connects and queries DNS servers with more than 40 different commands and the ability to search text in the DNS query result</li> <li>• Trace Route: monitors and records network hops and individual hop response times to pinpoint failures and bottlenecks</li> <li>• SNMP: uses standard SNMP commands to allow administrators to monitor and manage network performance</li> </ul>
<p><b>System</b></p>	<p>System level monitors for physical and operating system components of the infrastructure include:</p> <ul style="list-style-type: none"> <li>• File: verifies the existence of a specified file and searches for content within the file</li> <li>• Disk Usage: sets thresholds for disk usage and issues alerts when usage exceeds thresholds</li> <li>• Performance Counters: monitors Windows performance counters to capture and analyze data provided by applications, services, and drivers; helps determine system bottlenecks and problem areas to better tune system and application performance</li> <li>• Process (Windows): monitors Windows processes to capture and analyze key statistics, including CPU and memory usage and total number of threads; helps ensure processes are running as expected and using acceptable levels of CPU and memory resources</li> <li>• Services (Windows): monitors Windows services to capture and analyze key statistics, including CPU and memory usage and total number of threads; helps ensure services are running as expected and using acceptable levels of CPU and memory resources</li> <li>• Event Log: scans and filters system messages recorded by most Windows applications, including but not limited to information, warning, and error messages that can have an impact on the server and its services and applications; ensures mission-critical applications are operating normally and eases the task of manually scanning messages</li> <li>• Custom System Monitors: provides easy extensibility of monitoring capabilities so that external programs and scripts, such as third-party network analysis tools, can be executed and analyzed</li> </ul>

For more information, visit <http://www.WebWatchBot.com>

### **About ExclamationSoft**

ExclamationSoft is a global leader in Performance Monitoring Software for websites, servers, and core IT infrastructure. Its flagship product, WebWatchBot 5.0, greatly simplifies the monitoring of critical web-based applications for real-time performance awareness and problem notification. ExclamationSoft's suite of performance monitoring and email client tools is used by more than 3,000 companies, government agencies, and educational institutions worldwide to protect and extend their existing IT investments. ExclamationSoft is a privately-held company located in Doylestown, Pennsylvania.

### **About the Author**

*Karen Wyatt, CEO and Co-Founder, ExclamationSoft*

Karen Wyatt is the chief executive officer of ExclamationSoft, which she co-founded in 1999. She has more than 15 years of experience in developing technology software solutions. Prior to founding ExclamationSoft, Ms. Wyatt was director of business echnology for Marriott International. She holds a B.S. from The Pennsylvania State University and an M.S from the University of Maryland.

# ExclamationSOFT

The logo features the word "ExclamationSOFT" in a blue serif font. A yellow swoosh underline is positioned beneath the word, starting from the left and ending with a small yellow dot under the letter "T".

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