

Agents vs. Agentless Systems Management: The Total Cost of Ownership

A Case Study by Enterprise Management Associates
December 2005



ENTERPRISE MANAGEMENT
ASSOCIATES



Table of Contents

Executive Summary	1
Introduction	1
Comparing Agents vs. Agentless Solutions.....	1
Do More With Less.....	2
Controlling Costs is Key.....	2
Depth of Function.....	3
Deployment Speed	3
Other Considerations.....	4
In-depth Interviews	4
Diversified Technology Company.....	4
Electronic Entertainment Company.....	5
Total Cost of Ownership	5
EMA Perspective.....	6

Executive Summary

This paper investigates the agents versus agentless approach to enterprise systems management, looking at current trends in both technology and the marketplace. In September 2005, Enterprise Management Associates (EMA) conducted a vendor-independent Internet survey to investigate trends in monitoring, specifically with respect to agents and agentless solutions. These results were supplemented by in-depth interviews with two Fortune 1000 companies that utilize both agent-based and agentless systems management practices. A total cost of ownership (TCO) analysis is provided for one of the companies interviewed.

The results of the survey and interviews were well correlated. Agentless monitoring solutions address the major issues most important to enterprises today: cost, ease of maintenance, faster deployment, and lower impact on the managed server. The TCO analysis showed significant savings over five years for companies implementing an agentless monitoring solution. Most large enterprises did identify areas where agent-based solutions were needed to provide information not available from their agentless counterparts, however. EMA recommends that companies consider altering their monitoring strategy to use an agentless solution throughout the enterprise supplemented by agent-based point solutions where appropriate.

Introduction

The revolution in the IT industry of the late 1990s slowed to an evolutionary pace during the first five years of the new millennium. This was not due to a lack of new technology and innovation, but to fiscal restraints dictated by cost-conscious executives and driven by conservative shareholders. Ironically, while businesses continued to grow, the flat-rate of IT spending allowed enterprise IT staff to catch up in many ways. Instead of adopting new technology at a breakneck speed, IT focused on improving the stability of the existing infrastructure.

EMA has measured steady improvement in server stability across large organizations since 2000. While this might seem like a blessing to over-worked technical staff, the challenges for IT are beginning to heat up again. The next revolution is fueled by a new generation of sophisticated applications providing end-users with unprecedented service levels and flexibility. Underneath these promises are complex applications that require a new approach

to systems management. EMA predicts a major shift in focus in systems management in the next five years from infrastructure stability and performance to application availability and measuring the end-user experience. As applications are developed and released more quickly, successful monitoring solutions need to be more flexible and rapidly deployed in order to keep pace.

88% of survey respondents were satisfied with their ability to monitor the infrastructure.

Comparing Agents vs. Agentless Solutions

Agent-based systems management solutions deploy monitoring software on servers throughout the infrastructure. These agents collect data through a variety of API, system and application-level calls, often parsing log files and tapping other proprietary data stores. Information from these agents is then fed back to central monitoring servers where the results are tabulated, thresholds and alarms checked, and the results presented to the end user.

Agentless systems management solutions do not deploy software on the individual servers. Instead, the central management server polls devices in the infrastructure, getting information on availability and performance through published API, system, and application interfaces. Like its agent-based counterpart, real-time and historical statistics, alerts, and metrics are presented to the end-user via a systems management dashboard.

Traditional wisdom concerning agents vs. agentless solutions over-simplifies the comparison between these technologies. Historically, agent-based solutions have out-scored agentless solutions in the following areas:

- providing more detailed data and depth of function on applications and servers
- requiring less network bandwidth to operate
- monitoring servers when network connections are unavailable
- allowing more command and control functions over problem servers

Conversely, agentless solutions have conventionally been considered as:

- costing less
- simplifying maintenance over time

- deploying more quickly into the environment
- utilizing fewer resources on the managed server

A more complete understanding of the agents vs. agentless comparison requires an analysis of these eight points. Technology advancements have reduced the importance of several of these comparison points, and fiscal realities in most IT organizations have changed the priority of others. EMA's Internet survey provides a new measurement of the current weight that companies are placing on these comparison points.

Do More With Less

Mirroring current trends towards flat or declining IT staffing levels, the feature ranked most important by the largest number of survey respondents was ease of maintenance. Thirty-eight percent (38%) of all respondents listed ease of maintenance as the most important feature.

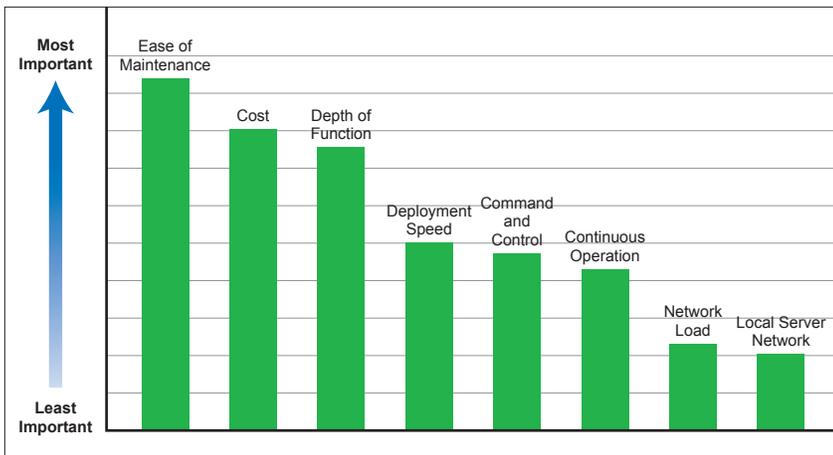


Figure 1: Relative Importance of Monitoring Features

It is difficult to absolutely quantify the maintenance costs associated with agents vs. agentless solutions. From a technology perspective, the comparison is straightforward. An agent-based approach requires distribution of software to all monitored servers in the infrastructure. This software must be updated and patched in order to keep current with application and operating system versions. Tuning is required to establish the level of information to be gathered on the monitored server. A single server may have multiple agents installed for monitoring its various resources (for example, operating system and applications). Installing any software on production servers also runs a risk of failure and downtime. In some cases, production

systems must be taken offline in order to update agents. While agentless solutions do not require maintenance on target servers, both solutions require maintenance on the collection servers.

From a practical standpoint, a good measure of the ease of maintenance of each solution is to look at staffing levels. The following quote from an interviewee for this case study which follows illustrates one example of how switching from an agent-based to an agentless solution reduced headcount by 60%.

“We reduced staffing in our monitoring group from five full-time employees (FTE) to two FTE by replacing our agent-based solution with an agentless one.”

- Director, Fortune 1000 electronic entertainment company

Another example comes from a previous study by EMA which examined two comparable Fortune 500 financial institutions; one used a primarily agentless approach and the other primarily used agents throughout the enterprise. The full-time staffing for the enterprise monitoring group is twice as large for the company using the agent-based solution. Most of the additional headcount, in this case, are allocated towards maintenance releases and establishing monitoring for newly-deployed application servers.

Of respondents stating that agentless solutions saved setup and maintenance time over their agent-based counterparts, the average time savings was estimated between 35% and 60%.

Controlling Costs is Key

Cost is becoming an increasingly important factor for companies considering a monitoring solution. With software, hardware, implementation and maintenance costs often reaching \$5 million, companies are taking a hard look at what they are getting for their money.

“Just in licensing fees, we lowered the cost of our monitoring software from \$1.2 million to \$0.5 million by moving from our legacy agent-based solution to an agentless one.”

- Manager, Fortune 100 diversified technology company

An empirical case study of TCO is presented at the end of this paper for one of the companies who participated in the in-depth interviews. Anecdotal evidence, however, is overwhelming in marketing studies of monitoring and systems management: agentless solutions cost less than agent-based software. For example, a detailed cost analysis of agent-based vs. agentless monitoring was recently undertaken by a Fortune 500 insurance company. The company, a long-time agent-based customer with annualized software and hardware costs for systems management of \$1.78 million, moved to an agentless solution at yearly cost of \$0.93 million.

Another data point that must be considered is the annual maintenance costs of the software. This cost varies between vendors and is often negotiated on a customer-by-customer basis as a percentage of the initial software purchase price. EMA has found no appreciable difference between vendors in yearly software maintenance fees as a percentage of total software cost. It follows, however, that a higher initial software purchase price will have a higher yearly maintenance fee.

Depth of Function

The third most important feature, based on survey rankings, is the depth of function provided by the monitoring solution. Fifty percent (50%) of survey respondents reported that in certain situations, an agent-based solution was needed in addition to an agentless solution in order to gather specific data. These requirements varied from custom scripts and batch files to database performance metrics. In all cases, the data required from an agent was focused on a single set of servers or application types (i.e., database servers).

“With the exception of a few Exchange servers, we were able to retire the legacy agents on all of our one thousand servers and switch them to agentless monitoring.”

- Director, Fortune 1000 electronic entertainment company

EMA, in a well-published series of articles in Network World in June 2005, investigates using a combination of agentless and agent-based monitoring. Active agents are deployed when needed and preferred, but agentless solutions are used as the de facto standard throughout the enterprise. This provides companies with the best of both worlds, allowing them to choose on a server-by-server basis which solution meets their needs.

While most customers were still predominantly using agent-based solutions, 95% of those polled were using some agentless components in their systems management solution.

In recent years, commercial application vendors and hardware vendors have begun to move towards open monitoring standards. Rather than relying on proprietary APIs, these vendors understand the value of having their products “plug into” enterprise monitoring without expensive custom modules. In the last twelve months, the concept of developing applications with standard monitoring hooks has made its way into custom application development methodologies and tools. EMA expects that wide-scale adoption of standard monitoring APIs will occur in application development practices in the next 2-3 years. This will drive the adoption of agentless solutions as the high-level standard at many large enterprises with agent-based monitoring taking a supporting role.

The downside to providing access to detailed application and hardware data is the propensity toward gathering too much information and being unable to use it effectively. One-third (33%) of all respondents felt that too much data was being gathered by their systems management tool. While this problem is not inherent to the type of monitoring solution employed, it should be noted that just because you can gather a particular data element does not mean that you should. With agent-based solutions the temptation is great to gather much more detailed data—although it does not guarantee that the data will be useful or used.

Companies should also consider the measurement of the end-user experience. In many cases, the detailed server performance metrics show that all parameters are within specifications, but the end-user is unable to access the information they need. Both agent-based and agentless monitoring solutions provide for the use of synthetic transactions to measure the availability and performance of applications from the end user’s perspective.

Deployment Speed

Ranked fourth on the Internet survey, deployment speed is an important consideration for monitoring solutions. Historically, implementation times for large-scale deployment of agent-based monitoring solutions can take years. EMA research has shown that incremental value in systems management must be shown every three months

during the deployment phase in order to maximize the chance of successful adoption of the technology.

“We were able to deploy an agentless solution across the company in less than three months with only two full-time staff and one consultant. Our previous agent-based deployment took over a year, a staff of five, and ten outside consultants.”

- Director, Fortune 1000 electronic entertainment company

Deployment of an agent-based solution requires that software is distributed to all servers in the enterprise. This software must be installed and tuned to minimize impact to the monitored system while providing the critical information needed by the monitoring and support staff. While recent improvements have been made by most of the major vendors, this process still takes time and represents a risk to the system. By comparison, agentless solutions can often automatically discover servers and be configured centrally without needing to touch the monitored device.

hardware over the last decade. For example, consider the network load of sending the monitoring data between the agents and the collection server vs. polling the servers and returning the monitoring data to the collection server. Ten years ago, network bandwidth was a limiting factor for many organizations. Now, the amount of monitoring data moving across the network is negligible for either approach and network bandwidth is generally plentiful. The survey also showed that local server loads, command and control functions, and continuous operations were not significant factors for most companies in choosing a monitoring solution.

In-depth Interviews

EMA conducted in-depth interviews with two IT organizations: a Fortune 100 diversified technology and manufacturing leader, and a Fortune 1000 electronic entertainment company. Each has a mixture of both agentless and agent-based solutions. The goals of the interviews were to determine the hard and soft costs and benefits associated with each type of monitoring.

Diversified Technology Company

The Fortune 100 diversified technology company faces the same challenges as many large enterprises: its infrastructure didn't scale well as the company grew. This led to poor stability and an increasing need to have visibility into its systems in order to monitor, diagnose and resolve issues. With over 5000 servers, it has supplemented its modest internal staff of 100 by heavily outsourcing IT operations.

The company had been using a major agent-based framework for seven years, but faced a bill of \$3.9 million for upgrading its licenses to the latest version and signing a one-year support contract. Recently, the company decided to replace its legacy solution with an agentless one, Mercury SiteScope. This lowered the company's licensing and support costs to \$1.0 million for the same period of time. It has also enabled the company to consider cutting back its outsourcing commitment.

The company has kept agent-based monitoring for drill-down details and deep-level metrics for certain mission-critical applications such as its Oracle servers, but SiteScope provides the ongoing monitoring of the infrastructure. In addition, SiteScope provides the company with “one tool and one dashboard for a very complex, heterogeneous environment,” according to the IT manager. The company

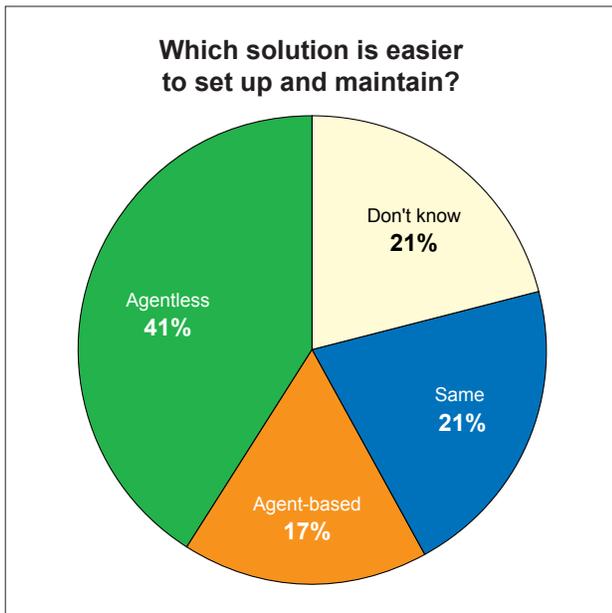


Figure 2: Ease of Set Up and Maintenance

Other Considerations

The final four bullet points ranked significantly less important in the Internet survey. These considerations are: command and control functions; continuous monitoring when the network is down; network bandwidth; and resources utilized on the managed server. Several of these have been rendered obsolete by advancements in

is also utilizing powerful agentless synthetic transactions to gain insight into the end-user experience.

In ranking its top three priorities for a monitoring solution, the company mirrored EMA's Internet survey (in order): ease of maintenance, cost, and deployment speed. The deployment of SiteScope is still underway, but the IT manager has found it "easier and faster to deploy, intuitive and significantly cheaper to license and support."

Electronic Entertainment Company

The Fortune 1000 electronic entertainment company has a complex IT environment with over 1000 servers and 300 IT staff. With a massive online gaming community consisting of over 100,000 concurrent users playing at any time and shipping requirements to simultaneously put hundreds of thousands of copies of its games on store shelves on the exact same day, systems availability has tremendously high visibility for the company. Electronic entertainment is a highly competitive environment with a most demanding audience. This drives uptime requirements to 99.99%.

The company purchased an agent-based solution from one of the major vendors in the 1990s to provide a monitoring framework for its infrastructure. The implementation took one year and required ten outside vendor consultants to install and configure throughout the enterprise. Afterwards, the company employed five full-time employees to manage and run the monitoring installation. While the solution provided a reasonable monitoring environment, the high maintenance costs, difficulty to manage, and unacceptable server load prompted the company to switch to an agentless solution in 2000.

In contrast, Mercury SiteScope was deployed in three months by an internal team of two with the help of one SiteScope consultant. The implementation was not without challenges. An outside SiteScope consultant was initially brought in to augment SiteScope's built-in reporting functionality with custom trending and reporting. Eventually, the company decided the best custom reporting solution could actually be built by internal developers, facilitated by SiteScope's open data architecture. However, the agentless approach was able to replace the more resource-intensive agent-based solution, provide the company with all the metrics that it needs to meet customer demand, and lowered staffing and ongoing maintenance costs.

The agentless approach provided other benefits for the company. Linux maintenance was proving to be difficult. New versions of the operating system were needed to exploit the latest native system commands. However, the agent-based solution vendor was unable to keep pace with releases of its monitoring modules, often lagging three months behind operating system releases. By eliminating the agent and relying on native operating system support, SiteScope was able to provide the information needed.

Currently, agents are still monitoring the Microsoft Exchange environment at the company because SiteScope does not measure e-mail latency times to the level the company wants. Otherwise, all the servers in the organization are now monitored by an agentless solution. While the company would prefer the more granular polling cycles available in an agent-based solution, the improvement in maintenance, management, and server load makes the switch to agentless monitoring worthwhile.

Total Cost of Ownership

EMA found no examples where the cost of buying, implementing or maintaining an agentless solution was greater than its agent-based counterpart, and there were several areas where companies realized significant savings in their TCO with agentless software. These primarily stem from a reduction in headcount needed to maintain and support agentless solutions. From the Fortune 1000 electronic entertainment company case study, the following table summarizes the TCO findings:

	Agent-based Monitoring	Agentless Monitoring
Initial Software Costs	\$320,000	\$200,000
Initial Deployment Costs	5 staff + 10 consultants for one year = \$1,500,000	2 staff + 1 consultant for three months = \$75,000
Initial Hardware Costs	\$50,000	\$50,000
Total Implementation Costs	\$1,870,000	\$325,000
Ongoing Staffing Costs	\$500,000 per year	\$200,000 per year
Software Maintenance Costs	\$64,000 per year	\$40,000 per year
Total Ongoing Costs	\$564,000 per year	\$240,000 per year

Table 1: Agentless vs. Agent-based TCO

Using these figures as an illustration, the difference in the TCO for the two solutions is staggering: the agent-based solution has a total cost of \$4,126,000 over five years while the comparable agentless solution has a five-year cost of \$1,436,000. This is shown graphically below.



Figure 3: Five-Year Cumulative TCO

EMA Perspective

EMA has found a high degree of correlation between the September 2005 Internet survey, its two November 2005 in-depth interviews, and ongoing market research being done by EMA and others. These results are that agentless monitoring solutions address the major issues most important to enterprises today: cost, ease of maintenance, faster deployment, and lower impact on the managed server. Additionally, EMA has found that many of the traditional strengths of agent-based solutions are either less important or no longer an issue.

EMA strongly recommends companies review their monitoring strategies on a periodic basis. Companies should consider altering their monitoring strategy to use an agentless solution throughout the enterprise supplemented by agent-based point solutions where appropriate. Mercury, the agentless monitoring vendor used by the examples in this paper, commands a leadership position in the agentless monitoring marketplace based on the maturity of their solution, SiteScope's depth of functionality, and its integration with the larger Mercury suite of products.

About Enterprise Management Associates, Inc.

Enterprise Management Associates, Inc. is the fastest-growing analyst firm focused on the management software and services market. EMA brings strategic insights to both vendors and IT professionals seeking to leverage areas of growth across e-business, network, systems, and application management. Enterprise Management Associates' vision and insights draw from its ongoing research and the perspectives of an experienced team with diverse, real-world backgrounds in the IT, service provider, ISV, and publishing communities, and is frequently requested to share their observations at management forums worldwide.

Corporate Headquarters:
Enterprise Management Associates
2585 Central Avenue, Suite 100
Boulder, CO 80301, U.S.A.

This report in whole or in part may not be duplicated, reproduced, stored in a retrieval system, or retransmitted without prior written permission of Enterprise Management Associates, Inc. All opinions and estimates herein constitute our judgement as of this date and are subject to change without notice. Product names mentioned herein may be trademarks and/or registered trademarks of their respective companies. ©2005 Enterprise Management Associates, Inc. All Rights Reserved.



**ENTERPRISE MANAGEMENT
ASSOCIATES**

Phone: 303.543.9500

Fax: 303.543.7687

info@enterprisemanagement.com

www.enterprisemanagement.com

1036.121605