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# Embedded SOA Management Solutions

by Randy Heffner  
for Enterprise Architecture Professionals



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A Supplement To "The Forrester Wave™: Standalone SOA And Web Services Management Solutions, Q4 2007"

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### EXECUTIVE SUMMARY

When evaluating service-oriented architecture (SOA) and Web services management solutions, it is important for enterprise architects to consider the embedded SOA management features of their existing application platforms and integration platforms. As a group, standalone SOA management solutions offer the best and most comprehensive capabilities, but some of the embedded solutions come quite close. More to the point, as your SOA strategy and platform are evolving, you may not yet require — or even know the best way to use — the full range of SOA management features. As they evaluate standalone SOA management, enterprise architects should understand and evaluate the embedded SOA management solution that they may already own, seven of which are highlighted here.

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Forrester interviewed 32 vendor and user companies, including: AmberPoint, BEA Systems, BMC Software, CA, Hewlett-Packard (HP), IBM, IONA Technologies, Microsoft, Oracle, Progress Software, SAP, SOA Software, Software AG, Sun Microsystems, TIBCO Software, and Vitria Technology.

#### **Related Research Documents**

["The Forrester Wave™: Standalone SOA And Web Services Management Solutions, Q4 2007"](#)  
October 22, 2007

["When To Use Which Type Of SOA Specialty Product"](#)  
January 29, 2007

["SOA Investment Strategies"](#)  
May 19, 2006

["Strategic Architecture Development In An SOA World"](#)  
March 15, 2006

## EVENTUALLY, YOU'LL NEED SOA MANAGEMENT

Sooner or later, any comprehensive, enterprise-level, strategic SOA platform will require an SOA and Web services management solution.<sup>1</sup> Forrester defines a SOA management solution as:

*Software infrastructure to ensure that the production operation of SOA-based services delivers on quality of service (QoS) expectations for technical performance and availability and, optionally, on QoS for security, business operations, and general policy compliance.*

SOA management comes in two general forms:

- **Standalone SOA management.** The first option is to use the standalone solutions offered by AmberPoint, CA, Hewlett-Packard (HP), IBM, Progress Software, and SOA Software. Forrester defines these as “standalone solutions” because they are credible alternatives even if SOA management is the only thing you buy from these vendors.
- **Embedded SOA management.** The second option for SOA management may be less obvious but is still important to consider. Your existing application platform or integration platform may have monitoring functions that provide either traditional component-level monitoring that can serve as an adequate near-term proxy for SOA monitoring or monitoring functions that have been enhanced for SOA, providing monitoring of service requests and responses, too. Beyond this, your existing platform may also have functions for policy enforcement, service-level management, SOA security, and other extended SOA management capabilities. While it is true that some embedded solutions manage only the service traffic flowing through their own platforms, this may be acceptable — at least in the near term — if that platform is central to your SOA infrastructure. Thus, you may already have the SOA management solution that you need for today.

Even though you would not buy an application or integration platform if you were only looking for SOA management, embedded SOA features may provide enough to meet your near-term — or even long-term — requirements. And for buyers that are also looking for an application or integration platform, it is wise to consider candidate platforms' SOA management features.

### Approach SOA Management As A Solution Space, Not A Product Space

Because of the dichotomy between standalone and embedded SOA management, when enterprise architects start evaluating SOA management, the first and most important thing is to pursue it as a *solution* space and not as a *product* space. This is important because a solution perspective provides a broader range of options for crafting the most effective, most economical, and least risky way to evolve the SOA management functionality that your enterprise needs. What's the difference between a solution-based and a product-based approach? In a product-based approach, you restrict your options for SOA management to purchasing a single standalone product that is positioned as an

SOA management or Web services management (WSM) product. In a solution-based approach, you will also:

1. Evaluate a set of products that function together as a standalone solution for SOA management.
2. Evaluate the extent to which your existing application platform or integration platform might serve your near- to midterm requirements for SOA management.

In a complete evaluation, include both standalone and embedded SOA management solutions. While an embedded SOA management solution may or may not provide the full breadth and depth of functionality that a standalone solution provides, it may well provide enough functionality to meet your immediate needs, allowing you to delay buying a standalone solution until the market is more mature and your requirements are better understood.

To provide a basis for a complete evaluation, this report highlights the major strengths and weaknesses of several embedded solutions. Our Forrester Wave™ evaluation of standalone SOA and Web services management solutions provides very deep product feature-function analysis sufficient to support a product selection decision.<sup>2</sup> This report is intended only to highlight major features in a manner sufficient to support a vendor shortlist decision.

### Look Beyond Web Services Management

Frequently, industry discussion will use the term WSM, but Forrester finds this too restrictive and short-sighted. Instead, Forrester calls the space SOA management, which acknowledges that:

- **SOA management is about more than just Web services.** For reasons of performance, reliability, or maturity, many firms find it necessary to deliver SOA-based services using both Web services and other protocols such as Java Message Service, native .NET protocols, and Java RMI. To be sure, the broad and open ecosystem of Web services is very important, as is the flexibility provided by XML. However, with today's levels of Web services maturity, Web services can't meet all SOA demands.<sup>3</sup>
- **SOA management goes much deeper than flows of requests and responses.** Successful production operation of SOA requires visibility into and control of much more than just the flow of service requests and responses. It must also have a view into application components, process flows involving multiple services, database calls, and multiple types of SOA infrastructure such as application servers and SOA appliances, to name a few such extended visibility points.
- **SOA management has strategic visibility into business operations.** Finally, when managing strategic SOA-based business services, you have direct visibility into something much more important than a collection of low-level technical IT assets. Viewing the flow of requests into

and responses from your strategic business services amounts to direct, real-time visibility into meaningful, measurable units of business activity, and business users may have a keen and direct interest in any one of these areas.

Thus, while the core functionality of SOA management focuses on performance and availability management of Web services traffic, the full functionality of the space is much broader. As you examine product alternatives, keep your design focus on the broader requirements of SOA management so that whatever your selected product's strengths and limitations are, you can develop plans for filling in any missing elements.

### SOA Management Is A Rapidly Evolving Market

Although there are strong SOA management solutions available in the market, Forrester still characterizes the maturity of this market as medium, at best, because:

- **Standards are not yet stable.** For a few short months, it appeared that OASIS's Web Services for Distributed Management (WSDM) standard might carry the day. But then HP, IBM, Intel, and Microsoft rendered WSDM inert by announcing a plan to supersede WSDM and other specifications with a restructured set of specifications that would integrate work from the WS-Management specification. In addition to the reconciliation of WSDM and WS-Management, at least 10 other closely related specifications have yet to be finalized as standards, including WS-MetadataExchange, WS-Policy, WS-PolicyAttachment, WS-ResourceTransfer, WS-Transfer, and WS-EventingNotification. Standardization will drive change into products, but it is a messy process that — judging by past Web services standardization efforts — could require up to three more years. Once the standards are complete, it will take more time to have solid, interoperable implementations in products.
- **Policy management may become a separate product category.** With SOA's heavy focus on a business services layer, a great deal of attention is focused on the design abstraction of service interfaces. This attention has, among other things, highlighted the value and flexibility of separately specifying policies for security, management, and business monitoring and subsequently attaching them to services. This leads to at least three instability factors: 1) SOA management solutions are rapidly evolving their policy management feature-function; 2) standalone policy management solutions are emerging; and 3) the role of SOA service life-cycle management tools in policy management is not yet fully developed.
- **The lines between SOA governance and SOA management are blurring.** SOA management is clearly part of the overall domain of SOA governance and, indeed, it is sometimes referred to (or associated with) the term “runtime SOA governance.”<sup>4</sup> But the depth of overlap and potential integration obscures the distinction between the two as product categories. As if to highlight the blurring boundaries, as we did this Forrester Wave analysis, more than one vendor would have preferred that Forrester evaluate SOA management and SOA governance in one combined analysis.

## Key Differences Exist Among The Solutions

Aside from the existence of both standalone and embedded solutions, some of the key differences between solutions include the:

- **Depth and breadth of visibility into service implementations.** When things go wrong with your services, problem resolution often requires knowledge that goes beyond service request and response flows. The visibility, if any, that solutions provide into the layers below the service interface varies. For example, suppose that a complex service has slow response time, and its implementation has a Java layer maintained by team A, a VB.NET layer from team B, and a database run by team C. A solution with deep visibility can immediately show the front-line support team which of the three is the biggest part of the service's response time, thus telling them which team to call. Without it, they would have to call all of the development teams and have them all sort out the source of the problem — which may also be slowed down by finger-pointing.
- **Types of products included as part of an SOA management solution.** Because the functional scope of individual products varies widely in this space, our Forrester Wave for SOA management is a *solutions* evaluation, meaning that the participants may respond with a set of products as long as each additional product contributes value for standalone SOA management. Thus, the solutions in the evaluation may extend beyond SOA management and include major functionality for SOA governance, SOA appliances, security infrastructure, Web application monitoring, SOA testing, and business monitoring. These extra functions have a very small impact on our analysis. Our evaluation focuses on SOA management and closely related functions that are present in multiple solutions.
- **Extent of functionality beyond core SOA management.** Solutions also vary in their scope of SOA management functionality. At its core, SOA management ensures the performance and availability of SOA-based services. A second ring of functionality, which we call extended SOA management, brings in security, generalized policy management, and certain aspects of SOA governance. A third ring includes lightweight business activity monitoring, service mediation and integration, and other features. The solutions vary across these three rings of functionality, with some focusing only on core SOA management.
- **Ties to and integration with SOA governance.** As a result of the current market fuzziness regarding the boundaries between SOA management and SOA governance, SOA management solutions intersect with SOA governance in different ways. Some vendors include their SOA governance solution “in the box” with their SOA management solution, while others keep their SOA governance solution separate and provide built-in integration between the two.

These and other differences emphasize the need for architects to understand the full scope of SOA management before buying anything. Also, as you assess priorities for SOA management, there's yet another option in addition to standalone and embedded SOA management. If the most

important need is visibility into the flow of service implementations across technology platforms, then a product such as OpTier's CoreFirst may help. CoreFirst can track the flow of individual service requests and transactions across platform boundaries, providing an end-to-end view of performance.

## HIGHLIGHTS OF SEVEN VENDORS' EMBEDDED SOA MANAGEMENT SOLUTIONS

Embedded SOA management solutions are offered by vendors that:

- **Have their own standalone *and* embedded SOA management solutions.** IBM is the only vendor in this category. Customers of IBM's WebSphere application and integration platform products may choose to examine their embedded SOA management features. Because IBM's standalone SOA management solution is evaluated in a separate Forrester Wave report, its embedded SOA management capabilities are not further highlighted in this report.
- **Resell a standalone SOA management solution and may have embedded SOA management.** BEA Systems resells AmberPoint's SOA Management System, integrating it with BEA's enterprise service bus (ESB) and other products. In addition, BEA's ESB has embedded SOA management features.
- **Have only an embedded SOA management solution.** Several other application or integration platform vendors have embedded SOA management features, including Microsoft, Oracle, SAP, Software AG, Sun Microsystems, and TIBCO Software.

We did not perform a full Forrester Wave analysis on embedded SOA management solutions because embedded solutions vary widely with respect to Forrester's SOA management evaluation criteria.<sup>5</sup> In lieu of creating a Forrester Wave, we have highlighted the major features of seven such solutions below, which architects can use as a starting point to determine whether to evaluate the solution in more detail. Beyond the seven that we highlight, architects should understand the monitoring and management features of any other application or integration platforms that they own.

### BEA Monitors Via Its ESB And Resells AmberPoint

BEA Systems' WebLogic and AquaLogic product lines provide a broad range of application platform and integration platform infrastructure for SOA-based and non-SOA applications. As its embedded SOA management solution, BEA has AquaLogic SOA Management (ALSM), which is an OEMed version of AmberPoint SOA Management System, and AquaLogic Service Bus (ALSB), which is an enterprise service bus (ESB) product. ALSM, by virtue of AmberPoint's position as one of the two Leaders in our Forrester Wave analysis of standalone SOA management solutions, provides a full range of SOA management features.<sup>6</sup> ALSB customers that do not have ALSM will still have a notable level of SOA management capabilities.

ALSM and ALSB work together as a unified solution for SOA management. Users with both products have multiple options for some functions. For example, they can share service security between the two or delegate it to one of them. Both ALSB and ALSM integrate with BEA's AquaLogic Registry Repository for integrated service configuration and to support SOA governance. AmberPoint's partnership with BEA has given it a particular priority for developing good integration into and support for BEA's products, including AmberPoint agents deployed within ALSB. Thus, BEA customers should ensure that ALSM receives a close look as part of their SOA management evaluation.

For the service requests that flow through ALSB, it can monitor service levels and display a dashboard of service activity. ALSB provides service load balancing, reporting on service faults, failover to alternate service instances, autoresponses to exception conditions, APIs and command line interfaces for integration with other infrastructure, forwarding of alerts to BMC Patrol, and extraction of message data for business reporting. ALSB's SOA security features provide message-level and transport-level security, as well as identity propagation through SAML. ALSB's core capabilities as an ESB provide for strong service mediation and message transformation. A future ALSB enhancement will provide for throttling requests to an overloaded service and improved service failover.

### Microsoft Extends System Center With BizTalk

Microsoft's embedded SOA management features and guidance are found within Microsoft System Center Operations Manager 2007 (System Center), Microsoft Solutions Framework, Microsoft Operations Framework, BizTalk Server 2006, and .NET Framework 3.0. System Center is a generalized enterprise IT management product, designed to manage the production operation of applications based on the Windows platform. It discovers and manages services through .NET 3.0 Windows Communication Foundation (WCF). Using its core management functions, System Center can report on service operations, manage service deployment and configuration, and perform incident management for service processing exceptions. Microsoft Solutions Framework and Microsoft Operations Framework provide guidance for managing and developing solutions, including SOA-based services, based on Microsoft products.

BizTalk extends Microsoft's SOA management capabilities with additional service monitoring, policy enforcement, mediation, and transformation features. Microsoft also partners with two standalone SOA management vendors, AmberPoint and SOA Software. Beyond the scope of SOA management, a full view of Microsoft's support for the SOA service life cycle would bring in additional products including Visual Studio Team System (VSTS), the UDDI server within Windows Server 2003, and Microsoft Services Business Architecture.

### Oracle Has Breadth Like A Standalone Player

Oracle's embedded SOA management solution consists of three core products plus features from the rest of Oracle's platform. At the center is Oracle Grid Control, a component of Oracle Enterprise Manager, along with its Service Level Management Pack and Management Pack for SOA. Enterprise Manager is an enterprise IT management product for all Oracle application server and integration platform products. Second, Oracle Web Services Manager (OWSM), which came out of Oracle's acquisition of Oblix, provides enforcement of service security policy, along with basic functions for mediation and transformation.<sup>7</sup> Third, Oracle Business Activity Monitoring (Oracle BAM) provides business-level visibility of service operations and, as a standalone BAM product, goes far beyond the functionality of the standalone players. Although Oracle's solution is spread across multiple products, the full package offers a high percentage of what a standalone solution would offer. Although its SOA management features are not as deep as a standalone player, they are almost as broad. Oracle customers should closely evaluate Oracle's embedded SOA management features.

Oracle Grid Control, with agents to provide visibility across a distributed service environment, monitors against defined goals for performance and availability of SOA-based services, raising alerts and performing autoresponses for processing exceptions. It measures performance and availability for SOAP and non-SOAP service requests, as well as monitoring service implementations, including Java components and process orchestrations in Oracle BPEL Process Manager. Its monitoring includes calendaring features — different service-level goals for different days and times — topology displays depicting the status of the service network, message correlation via correlation keys or message headers, platform heartbeats, and synthetic transactions.

Oracle's solution provides active service management via service load balancing, the ability to start and stop service instances, and routing to back up service instances in case of failure. Command line interfaces, JMX components, and Java APIs provide for integration with other software infrastructure. OWSM integrates with CA SiteMinder and Oracle's own identity management products and can propagate identity via SAML. Oracle BAM provides extensive business monitoring features that are integrated with Oracle's SOA management functions. Oracle ESB provides extensive service mediation and transformation features for customers who need more than what OWSM provides.

### SAP Has Basic SOA Monitoring And Partner Tools

SAP NetWeaver Administrator is the primary management tool for the SAP platform. SAP has invested heavily in end-to-end application monitoring and root-cause analysis but has yet to develop specific monitoring features for SOA-based services. For traditional component-based management, there is extensive tooling in SAP's Solution Manager Diagnostics, which includes bundled licenses of BMC AppSight and CA Wily Introscope.<sup>8</sup> For SOA monitoring, SAP provides basic statistics for integration flows, including response times, faults, and alerts. Introscope will help with deep root-cause analysis for SAP-related SOA-based services in Java and .NET. For business-

level monitoring, NetWeaver Business Intelligence can read and summarize log data for service requests and responses. SAP has an equity investment in AmberPoint, and it points to AmberPoint and SOA Software as important solutions for comprehensive SOA management. SAP's future plans include monitoring displays specifically for SOA-based services and further development of SOA governance features integrated with SAP's Enterprise Services Repository.

### Software AG Includes SOA Governance

Software AG's solution is embedded in four products: CentraSite Governance Edition, WebMethods X-Broker, WebMethods Optimize for Infrastructure, and WebMethods ESB. The solution provides an important set of SOA management functionality. In many cases, the features are not as extensive as most of the standalone solutions, but the solution's SOA governance features are an important asset.

X-Broker, as the central SOA management element of the solution, provides proxy-based performance monitoring of service requests and responses, with displays of production statistics and alerts when service-level goals are violated. For availability, the solution can display whether a service or its container is currently live. X-Broker publishes service metrics into CentraSite.

Service contracts defined in CentraSite provide a structure for grouping multiple policies into a composite specification, to which users and groups with like requirements may be tied. X-Broker's tooling supports policy effective dating, policies based on message content, and custom policy creation, including an XPath editor for complex rules and a pluggable model for extending X-Broker with custom-written policy handlers. It does not support automatic discovery of services in production. The solution's extensible metamodel, upon which service management (and governance) is based, is defined in the CentraSite SOA repository. The workflow within CentraSite supports a facility for tracking projected service usage against provisioned service capacity.

Among other key SOA management features are service load balancing (round-robin and adaptive balancing based on service performance or request counts), enforcement of limits on service request volumes, security policy enforcement via WS-Security, and integration with other infrastructure via JAX-R and Web services APIs. The solution tracks service versions, using them as the basis for version resolution policies. Active management features include routing to a backup instance of a service. Mediation and transformation are provided by X-Broker and, more extensively, by WebMethods ESB.

### Sun Microsystems Has Strong Security

Sun's SOA management solution comes from two sources. Although its own Java CAPS integration platform includes basic monitoring features, Sun resells Layer 7 Technologies' SecureSpan Gateway and relies heavily on it for SOA management functions. Although SecureSpan is an SOA appliance that focuses on security and XML acceleration, it also has a performance monitoring console. The solution provides strong security features and basic core SOA management functions.

As a network-based proxy, SecureSpan has visibility only to service requests and responses, not service implementations. It does not have agents deployed to service processing nodes or the ability to autodiscover services in production. Its monitoring console displays service performance, throughput, and policy violations for individual services. Although service-level goals may be specified via policies, they are not included in the monitoring console's graphical displays. Availability reporting includes reporting on service request failures and degraded response time. Since XML security is a core part of SecureSpan's functionality, it has broad support for various security token types, and it integrates with several identity management products.

Policy specification is heavily based on the WS-Policy standard. Policy fragments may be stored and reused as templates, and policy logic can be dynamically modified based on message content, time of day, message counts, and other criteria. The solution's policy capabilities can be extended with custom policies written in Java. Other important SOA management features include request throttling, service load balancing, initiation of autoresponse actions, integration into other infrastructure via Java RMI APIs, and XML-based mediation and transformation. Migration between staging environments is facilitated through a partitioned deployment scheme, and the product supports both single and en masse policy migration between partitions.

### **TIBCO Has Strong And Deep Monitoring**

TIBCO Software's BusinessWorks is the center of its integration platform, and it forms the core of TIBCO's embedded SOA management solution. In building and enhancing its integration platform over the years, TIBCO has focused heavily on monitoring of integration flows and surrounding infrastructure. This provides a strong foundation for SOA management, with additional features provided by products including TIBCO Hawk, TIBCO ActiveMatrix Policy Manager, TIBCO Enterprise Management Advisor (EM Advisor), TIBCO Enterprise RTView, TIBCO OpsFactor, and TIBCO BusinessEvents. For service and process flows based on BusinessWorks, the solution has strong SOA monitoring and management features. TIBCO customers should be sure to look closely at TIBCO's embedded SOA management features, which compare well against the breadth of the standalone players.

With monitoring built into BusinessWorks, TIBCO's solution can monitor service requests that flow over the wide range of protocols and through the many adapters that BusinessWorks supports. It has a software development kit (SDK) for custom extensions to additional endpoints. Hawk extends TIBCO's visibility to infrastructure such as Java platforms, .NET, mainframes, message queuing, databases, and operating systems. The solution uses multiple mechanisms for collection of monitoring data, including intermediaries, agents, and direct use of various platform management interfaces. Service status displays include response time, uptime, request counts, and request success/failure ratios. RTView provides tools for building custom dashboards. For services created using BusinessWorks, EM Advisor provides topology views showing service implementation layers.

Service policy management is limited to service requests that flow over HTTP/S and JMS. ActiveMatrix Policy Manager is based on an OEMed version of AmberPoint's policy management engine — but not the full AmberPoint SOA Management System. Policy management is one of the particularly strong parts of AmberPoint's solution, and with it, TIBCO extends its policy enforcement beyond BusinessWorks with customized policy agents for Java and .NET. Other important SOA management features include service load balancing and failover; platform heartbeats; integration with other management infrastructure via JMX, SNMP, and WSDM interfaces; service versioning (as part of the BusinessWorks development environment); direct monitoring of BPEL flows in BusinessWorks; transport-level service security; and message-level security using WS-Security and WS-Policy.

Active management features include request throttling and starting and stopping service instances. In addition, autoresponses can kick off an arbitrary sequence of actions programmed using BusinessWorks. They can direct Hawk, as a full SNMP manager, to change settings on various service infrastructures. TIBCO BusinessEvents extends the solution's capabilities for recognizing exception conditions and initiating autoresponse actions. As an integration platform, BusinessWorks provides extensive features for mediation, transformation, and content-based routing. OpsFactor provides business monitoring features that draw from service and process flows in BusinessWorks. A portlet architecture allows TIBCO displays to be included in non-TIBCO portals.

## RECOMMENDATIONS

### EVALUATE BOTH STANDALONE AND EMBEDDED SOA MANAGEMENT

Given the rapidly developing nature of the market for SOA management, the primary driver of your investments in SOA management should be the specific near- to midterm benefits that you will get from SOA management. The benefits should be stated as clear improvements in specific processes and procedures for IT and business operations. This approach will ensure that your investment pays for itself even if changes in the market lead to rethinking and overhaul of your SOA management strategy once the pace of change in the market slows down.

For example, if you are able to, at least for now, get by with embedded SOA management capabilities, you can get what you need for free with your existing platform. By ignoring industry voices that say that you can't do SOA without buying a full SOA management solution, you gain more options and flexibility to craft an SOA management investment strategy that gives you what you need in the time frame when you need it *and* when you have the SOA maturity to know best how to use it.

At the same time, it is important that any tactical investments that you make now put you on a path to a future vision of a broad SOA platform that supports strong SOA management, SOA governance, SOA security, service policy management, service mediation and transformation, and more. Thus, it is important to gain a strategic perspective now by understanding the full feature set of a comprehensive standalone SOA management solution.

It is best to have both standalone and embedded SOA management on your radar screen for evaluation. One useful strategy is to compare: 1) a standalone SOA management solution; and 2) an embedded SOA management solution; with 3) real, specific pains and costs if you wait a while before investing in SOA management. A “What if we wait?” analysis can help you to zero in on exactly when you’ll be ready for specific SOA management features and functions.

## SUPPLEMENTAL MATERIAL

### Methodology

Forrester undertook this report specifically as a corollary to our Forrester Wave for standalone SOA and Web services management solutions. Whereas the intent of the Forrester Wave is to provide very deep product feature-function analysis sufficient to support a product selection decision, this report is intended only to highlight the major features in a manner sufficient to support a vendor shortlist decision.

We identified major application platform and integration platform vendors not included in our standalone SOA management analysis that might have significant features for embedded SOA management. We invited these vendors to provide a written summary of their most important SOA management features and functions and, optionally, to provide additional detail by completing the same comprehensive solution information survey used with our Forrester Wave analysis. Forrester reviewed the vendors’ input and prepared the summaries included in this report. Every participating vendor reviewed its own summary for factual accuracy.

### Companies Interviewed For This Document

AmberPoint	Oracle
BEA Systems	Progress Software
BMC Software	SAP
CA	SOA Software
Hewlett-Packard	Software AG
IBM	Sun Microsystems
IONA Technologies	TIBCO Software
Microsoft	Vitria Technology

## ENDNOTES

- <sup>1</sup> Forrester has published numerous reports on many aspects of SOA. See the June 8, 2007, "[Topic Overview: Service-Oriented Architecture](#)" report.
- <sup>2</sup> Forrester evaluated leading standalone service-oriented architecture (SOA) and Web services management solution (or simply, SOA management) vendors across 100 criteria and found that Progress Software and AmberPoint, by virtue of their singular focus on the space, have the richest and cleanest solutions. IBM's offering is also strong, and it has many points of integration with the rest of IBM's Tivoli product line. SOA Software's solution includes SOA governance, but it lacks deep visibility into service implementations. Hewlett-Packard's solution has the best monitoring console and availability reporting, as well as integration into the vendor's IT management products. Java and .NET users will find much to like in CA's solution, which has the deepest visibility for service implementations centered on Java and .NET. When evaluating options for SOA management, in addition to these standalone solutions, it is very important to consider the embedded SOA management features of your existing application platform and integration platform vendors. See the October 22, 2007, "[The Forrester Wave™: Standalone SOA And Web Services Management Solutions, Q4 2007](#)" report.
- <sup>3</sup> To build Web services that operate with high quality of service, the industry needs many specifications besides the core Web services standards, like those for management, transactions, and advanced security. These are in development and are only mature enough for aggressive technology adopters at this point. See the December 14, 2006, "[Your Strategy For Web Services Specifications](#)" report. In addition, the other reports in the "Status Of SOA And Web Services Specifications" series provide good information on this topic.
- <sup>4</sup> A comprehensive view of SOA governance includes the processes, organizational structures, infrastructure, policies, and communication channels for all aspects of your SOA strategy. SOA governance ranges from service portfolio and SOA platform planning to service design, implementation, and operation. See the June 12, 2006, "[The Scope And Focus Of SOA Governance](#)" report.
- <sup>5</sup> In addition, the audience for an embedded SOA management Forrester Wave would be smaller and more specialized than for standalone SOA management because a vendor's embedded SOA management solution will typically be of interest only to that vendor's current application and integration platform customers.
- <sup>6</sup> ALSM is not described further in this report because it is a rebranded version of AmberPoint, which is described in detail in our Forrester Wave analysis of standalone SOA and Web services management solutions, where AmberPoint's solution rated within our Leader category. AmberPoint's solution has broad and deep visibility into SOA implementations, a strong architecture for policy management, and the strongest market presence of the vendors that we evaluated. See the October 22, 2007, "[AmberPoint's Market Presence Leads The Standalone SOA Management Market](#)" report.
- <sup>7</sup> Despite having "Web Services Manager" in its name, OWSM has only very limited core SOA management features but rather focuses most heavily on security policy enforcement (security was the forte of Oblix, which Oracle bought). Core SOA management features are provided by Oracle Grid Control and its integration as part of Oracle Enterprise Manager. Oracle Grid Control is packaged with Oracle Application Server, not with OWSM. OWSM is available standalone or as part of Oracle SOA Suite.

<sup>8</sup> CA Wily Introscope is part of CA's standalone SOA management solution evaluated in our Forrester Wave. Introscope has deep visibility into service implementations on Java and .NET platforms, but it is CA Wily SOA Manager that provides most of the SOA-focused capabilities of CA's solution.

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