

zapthink white paper

THE SOA MANAGEMENT LANDSCAPE

CREATING A DIALOGUE BETWEEN ENTERPRISE ARCHITECTURE & IT OPERATIONS





THE SOA MANAGEMENT LANDSCAPE

CREATING A DIALOGUE BETWEEN ENTERPRISE ARCHITECTURE & IT OPERATIONS

November 2006

Analyst: Jason Bloomberg

Abstract

As organizations progress with their Service-Oriented Architecture (SOA) initiatives, they soon realize that implementing SOA is a broader endeavor than simply creating Web Services interfaces. As SOA implementations mature, companies find that Service-oriented best practices apply to not only how business leverages IT to meet its goals, but also how IT itself operates. As a result, managing a SOA implementation becomes a multi-faceted task, as the IT services and business services that IT Service Management and Business Service Management deal with, respectively, come under the purview of SOA management. Understanding the notion of “service” in this broader context, as well as the role of management within the context of SOA, are critical skills for Enterprise Architects, network operations personnel, and others within the organization responsible for the success of their SOA initiatives, and the benefits the business receives from their IT investments.

All Contents Copyright © 2006 ZapThink, LLC. All rights reserved. The information contained herein has been obtained from sources believed to be reliable. ZapThink disclaims all warranties as to the accuracy, completeness or adequacy of such information. ZapThink shall have no liability for errors, omissions or inadequacies in the information contained herein or for interpretations thereof. The reader assumes sole responsibility for the selection of these materials to achieve its intended results. The opinions expressed herein are subject to change without notice. All trademarks, service marks, and trade names are trademarked by their respective owners and ZapThink makes no claims to these names.

I. Managing Services in the Enterprise

Information technology (IT) is undoubtedly a strategic enabler for enterprises today. Instead of perceiving IT as an unpleasant but necessary expense, companies rely upon IT to provide better value for customers, greater power to employees, and improved agility to the organization as a whole. Companies whose IT environments lack flexibility or cost effectiveness risk losing their competitive edge in the marketplace to firms that can creatively leverage their technology assets for competitive advantage. The steadily increasing importance of IT comes in the face of burgeoning complexity and business change. Companies that make effective use of the ever-changing business environment are able to compete more effectively and thrive in any business climate. Such companies are particularly adept in tough economic times, often finding opportunities in the midst of chaos. Now more than ever before is IT critically important to the success of businesses worldwide.

Instead of being an enabler, however, technology is frequently a significant barrier to many companies' ability to respond to change, for two reasons. First, technology has become so intertwined with the organization's existing business processes that changing a process requires changing the technology—a complex, costly, and error-prone endeavor. Second, because technology is often expensive, difficult, and complex, technical issues often limit companies' agility, because the complexity of the technology acts as a limiting factor for the business.

To understand these challenges of business agility, it's important to understand the complexity of today's IT environment. An IT organization consists of many different parts, each of which contributes toward the goals of helping IT meet business needs. Yet, these parts rarely act as a cohesive whole that can rise to the agility challenge, due to the cost and complexity of maintaining today's IT environment. Companies need a better way of leveraging IT as a business resource, and that need has led to a new movement known as Service Orientation.

Service Orientation is a business approach that leverages IT resources as flexible, business-oriented services. Services abstract the underlying complexity of the IT environment, providing greater power and flexibility to the business. Service Orientation has the power to increase competitiveness in the face of today's ever-changing business environment, and once businesses realize the transformative power of this critically important business concept, they will be in the position to deal with ongoing, often unpredictable, change.

The core enabler of Service Orientation is *Service-Oriented Architecture* (SOA), a set of best practices for organizing and managing IT resources and people to build and support such services. SOA has increasingly gained acceptance as a best practice approach to Enterprise Architecture (EA) over the last five years.

Now more than ever before is IT critically important to the success of businesses worldwide.

Service Orientation is a business approach that leverages IT resources as flexible, business-oriented services.

Thank you for reading ZapThink research! ZapThink is an IT advisory and analysis firm that provides trusted advice and critical insight into the architectural and organizational changes brought about by the movement to XML, Web Services, and Service Orientation. We provide our three target audiences of IT vendors, service providers and end-users a clear roadmap for standards-based, loosely coupled distributed computing – a vision of IT meeting the needs of the agile business.

Earn rewards for reading ZapThink research! Visit www.zapthink.com/credit and enter the code **SOAML**. We'll reward you with ZapCredits that you can use to obtain free research, ZapGear, and more! For more information about ZapThink products and services, please call us at +1-781-207-0203, or drop us an email at info@zapthink.com.



Today, the majority of enterprises and government organizations are somewhere on their SOA roadmap. As companies make progress with SOA, however, they soon realize that there are many different meanings to the word “service.” Understanding the various types of service, how SOA applies to all of them, and most importantly, how to manage the variety of services in the enterprise are all critical elements of achieving the business agility and cost effectiveness benefits of IT.

So, What is a Service Exactly?

In fact, the word *service* is one of those general terms that have many different meanings depending on the context. In different situations, service is what you get in a restaurant or gas station, what you’re in when you join the army, or what you endure in church. Web Services, of course, have come to mean something more specific, namely software services that consist of standards-based interfaces to IT functionality that one computer system exposes to another.

As companies adopt SOA, one of the first steps they often take is to organize specific application functionality into loosely-coupled services, increasingly exposed as standards-based Web Services, which they can then compose into business processes that meet continually evolving business needs. As their SOA initiative moves from the departmental to the enterprise level, however, the notion of service soon grows well beyond Web Services.

What, then, is a service in the context of IT? We can define a service as any functionality that one computer provides to another, but this definition is quite broad. After all, we could be talking about AOL or email, and we’d still be covered under this loose definition of service. It makes sense, therefore, to delineate the various types of services, so that we can all make sure we’re speaking the same language. Let’s peel back the onion of services a bit, and clarify the different types of services:

- *IT services* – capabilities that an IT organization provides to its users. Simple examples of IT services include corporate email and print services. As IT departments mature, however, they position every capability they provide to the business as an IT service, and frequently leverage the IT Infrastructure Library (ITIL) for IT Service Management best practices.
- *Business services* – a business service delivers quantifiable value to the business. Business services provide visibility into the organization’s key performance indicators, and also offer line-of-business personnel tools they can use to actively manage the business.
- *Loosely coupled services* – contracted interfaces to software functionality and data that independent software consumers can access and compose into business processes. The loose coupling depends upon a software architecture oriented toward such services, in other words, these are the services that SOA specifies. Sometimes such services are Web Services, which leverage open standards, but not necessarily.

Companies that have implemented any of these different types of service realize that they can only gain value from the service if it has an appropriate management infrastructure.

It’s important to think of a broad range of non-functional capabilities as services, and in many cases IT organizations have already been doing so, as the examples above illustrate. Regardless of the type of service, however, companies that have implemented any of these different types of service realize that they can only gain value from the service if it has an appropriate *management infrastructure*.

An unmanaged service provides little or no value to the organization, because there's no way to guarantee that it will do what it's supposed to do. Business agility, after all, depends on the proper, efficient functioning of systems, networks, applications, information, services, and processes. Enterprise Architects, therefore, must consider security, monitoring, change management, and compliance in their SOA initiatives as part of a holistic management approach. Managing the variety of services in the organization, therefore, is one of the most critical challenges facing IT organizations today.

Defining Service Management

IT excels at generating a plethora of terms that share similar, but different meanings. Case in point: IT Service Management, Business Service Management, and Web Service Management—there are many different flavors of service management in the world of IT, and they each connote different meanings of the word “service.” When companies talk about IT Service Management (ITSM) or Business Service Management (BSM), however, they're usually not talking about Web Services or SOA. Bringing together these different service management concepts under the banner of SOA is essential for achieving the broad agility benefits of the architecture.

Best practices for ITSM have been long in development, and as such, a logical starting point to any discussion on ITSM begins with ITIL, a comprehensive collection of documents and other artifacts delineating a range of ITSM best practices. ITIL contains best practices in six areas: service support, service delivery, service management planning, information and communications technology (ICT) infrastructure management, applications management, and the business perspective.

In contrast, BSM is a process for measuring the business and financial impact of IT systems, ideally in real time. Companies define key performance indicators (KPIs) that form the business metrics that drive BSM, which enables the visibility and enforcement of those metrics. In other words, BSM brings accountability to IT. BSM should ideally be a broader concept than just business measurement of IT. The services a company provides to its customers should map to internal services, which in turn have underlying support systems and other infrastructure services.

The most important business services are those that support critical business processes. In order to better serve the business, IT management must ensure the effectiveness and health of business services, which is the primary motivation for BSM. As a result, IT management requires tools that give business managers visibility into how their business services, and the processes dependent on them, are operating. There must also be a relationship between the business processes and the users' experience as they work with the applications that the business provides. Presenting the health of this relationship in an easily visualizable form that links it to the business processes is the heart of BSM.

II. Managing Web Services and Service-Oriented Architecture

In order to realize the benefits of SOA, companies must transition their systems from existing inflexible architectures to SOA in a manner that does not impede the ongoing necessary functionality of the technology. Yet, the act of rearchitecting is not sufficient by itself to guarantee that the resulting business services will meet the needs of the business. The enterprise also must have management infrastructure in place that can support the monitoring of services

The most important business services are those that support critical business processes.

The increased flexibility SOA affords will necessitate new metrics for measuring the effectiveness of IT operations.

performance as they are being moved into production as well as once they are available for public consumption. In fact, service performance is only one example of the wide variety of things the enterprise must monitor.

In order to encapsulate the underlying software components and systems with loosely-coupled service interfaces and then compose these fine-grained atomic services into coarse-grained business services, companies must implement management infrastructure that can establish and maintain the connections between the software on the one hand and the services on the other. SOA management is this management infrastructure that companies need to support the ongoing requirements of SOA implementations.

It's also important for IT operations managers to understand that the increased flexibility SOA affords will necessitate new metrics for measuring the effectiveness of IT operations. In the IT world, flexibility means an increased rate of change. As a result, IT needs a strategy that mitigates this faster pace by applying the principles of loose coupling, separation of concerns, and centralized management to their IT environments. Furthermore, IT operations must be able to leverage SOA to improve their IT management overall. This tight interrelationship between architecture and operations is one of the organizational changes that Service Orientation introduces in the enterprise. Enterprise Architects and IT operations personnel must now communicate with one another, and establish a basis for ongoing problem resolution.

Web Services Management vs. SOA Management

Achieving the necessary level of loose coupling for services in an enterprise environment is a substantial challenge. Consumers of services require them to be available and to provide the capabilities and service levels that their contracts and associated policies require them to provide. To maintain such services, therefore, requires a sophisticated management infrastructure.

Early in the development of Web Services-based SOA, enterprises focused on simply managing the service interfaces themselves—in particular, Web Services interfaces. New Web Services Management tools helped companies manage the systems and applications that supported their Web Services implementations, but focused more on the service interface than the underlying technology. In the short term, as companies sought to manage their growing Web Services implementations, they looked to such products to provide sufficient visibility and control into underlying systems and applications that maintain their Web Services.

Managing Web Services and managing the overall SOA implementation are different, although overlapping problem areas.

It soon became clear, however, that managing Web Services and managing the overall SOA implementation were different, although overlapping problem areas. Loosely coupled services, after all, are simply interfaces; effective management of such interfaces necessarily requires management of the underlying infrastructure. This reality highlights one essential connection between ITSM and SOA management: maintaining the loose coupling at the service interface requires ITSM, because loosely coupled services depend upon IT services.

There is more to the relationship between ITSM and SOA than the management of the IT services that underlie the services, however. As companies leverage Service-oriented approaches to Enterprise Architecture, they will increasingly count upon SOA to provide business value. Business agility, after all, is one of the strongest motivations for implementing SOA in the first place. The question of SOA management, therefore, becomes closer to BSM than ITSM: how can the business leverage loosely coupled services to meet its ever-changing needs?

ITSM differentiates how IT delivers systems management functions. By aligning with ITIL, using a federated CMDB, and Web Services, it's possible to implement a comprehensive and integrated overall systems management solution in a Service-oriented environment. The loose coupling of services, on the other hand, makes it harder to determine and isolate problems when they crop up. Keeping track of the relationships and dependencies among services is as important as keeping track of the services themselves. While loose coupling provides flexibility, governance helps to ensure the reusability of services, which is also a challenge for traditional systems management. Higher flexibility leads to higher rates of change, while loose coupling suggests more things to monitor and more relationships to track.

Because services within SOA typically extend beyond Web Services, SOA management must also consider services that aren't Web Services, sometimes requiring the integration of Web Services management techniques with management techniques for other, more tightly coupled composite applications. Such techniques include transaction response-time tracking, message infrastructure monitoring, component resource monitoring and the tracking and management of configuration items.

SOA management, in fact, presents many ITSM challenges. In order to provide for the loose coupling at the service interface, as well as for IT resources, it's important to manage and prioritize quality of service over a range of dynamic resources. SOA management must also deal with the increased complexity of deploying interdependent services. Deploying such services rapidly increases the complexity and cost of management.

IT operations must also deal with version control and change management of services, as well as managing the proliferation of overlapping services. Customers need good change management, release management and availability management processes, regardless of the status of their SOA initiatives. Within SOA environments, however, the services layer introduces a higher capacity to change implementations. One of the key values of loose coupling is that helps organizations change the underlying implementations of the services more gracefully than before.

SOA also introduces the metadata-driven composition of services. Managing these virtualized flows requires the control and tracking of resource utilization for IT financial management, as well as the identification and coordination of problem resolution across organizational boundaries. Managing distributed services also includes managing access control for services, applications and data, and provisioning of the associated identities, possibly requiring the federation of security credentials.

SOA management tools require several capabilities that augment an IT organization's ITSM efforts. SOA management starts with service management, including application service level management, transaction workflow management, business performance management, and services and applications security capabilities, as well as root cause analysis. However, SOA management goes well beyond management of services. Specifically, SOA management also requires an increased ability to manage both business and IT processes, including business process monitoring change and release management, configuration management, availability management, security management, and role management. Furthermore, SOA management also provides for the management of the supporting IT environment, including middleware management, systems, storage and network management, virtualized IT infrastructure management, and security for users, data and

SOA management tools require several capabilities that augment an IT organization's ITSM efforts.

SOA management encompasses much of ITSM and BSM.

Existing security approaches are still necessary, but no longer sufficient to address new sources of threats.

infrastructure. In other words, SOA management encompasses much of ITSM and BSM.

SOA Management and Security

If SOA management requires and encompasses ITSM and BSM capabilities, it's clearly necessary to consider how SOA management deals with general service management issues like security. In fact, the security aspects of SOA management are among the most complex, because of the comprehensive nature of security requirement—what ZapThink calls the “twenty doors” problem: locking 19 doors out of 20 provides 0% security, not 95%. Simply securing one part of a system, or a network, or a building provides only false security.

Architects and IT operations personnel must work together to consider all possible risks, including those unpredictable ones that are potentially the most costly. Therefore, placing SOA-related threats into the context of an overall security strategy is critical. If a company increases its risk by not securing its services, then there's no question that the company must close and lock this door. However, simply securing a company's services alone can at best provide only a false sense of security.

Every organization must therefore consider multiple areas within the IT environment, including email, Web applications, remote users, and more, and evaluate the threats that each of these channels presents. When Web Services introduce new application interfaces, for example, the CIO must conduct basic due diligence to do everything they can to protect the business against any new attack vectors that may now exist.

It's also important to realize that existing security approaches are still necessary, but no longer sufficient to address these new sources of threats. User authentication and authorization are not enough, because companies do not authenticate many business transactions, and in any case, authentication mechanisms cannot protect the network, because of the possibility of compromising those mechanisms. Furthermore, companies cannot effectively address identity management for services separate from their broad-based identity and access management capabilities across the enterprise.

While authentication of users and the appropriate authorization of requests is only a part of the security landscape for SOA, there's no question that enterprise identity and access management (IAM) is a fundamental prerequisite for SOA, because services provide a layer of abstraction that can lead to the loss of security *context*, where the information about the identity and access privileges of a requester of a particular service may be lost to the underlying applications that provide data and functionality to that requester. Furthermore, increased service reuse opens up the possibility of exposing services to new, possibly unintended users.

In fact, security has long been a set of IT services, so it makes sense to think of providing security and management of security as services as well. Centralized security management, in particular, is essential for the sustainable management of security across the various endpoints, brokers and mediators that are responsible for enforcing some aspect of security, including message integrity, privacy, non-repudiation, and identity federation. A centralized policy manager and should complement such these enforcement points.

SOA management must therefore take into account both aspects of IT security: threat management as well as IAM. As organizations move to standards-based, loosely coupled computing, they can no longer rely upon the closed, proprietary nature of certain systems to offer a measure of *de facto* security. Instead,

Unless companies can resolve the security issues inherent in building services, their SOA initiatives will likely fail.

The greatest challenge with BSM is that today, most BSM solutions are for IT managers, not business managers.

security is a roadblock to SOA adoption. Unless companies can resolve the security issues inherent in building services, their SOA initiatives will likely fail.

III. The Business/IT Disconnect

So far this paper has placed the discussion of SOA management primarily in the context of ITSM. However, SOA management includes the management of business processes, as well as providing visibility into key performance indicators (KPIs) to business users. Such capabilities fall more in the scope of BSM. Therefore, it's important to note that the greatest challenge with BSM is that today, most BSM solutions are for *IT managers*, not *business managers*. This fact begs the question: how does the line of business actually leverage IT to manage its KPIs? Do business managers simply rely upon IT managers to filter, and hence dumb down, the BSM information sufficiently for them to understand? Such dumbing down may happen in some organizations, to be sure, but the technical level of BSM information isn't really the problem. The problem is that most BSM systems still primarily provide IT information, rather than business information.

Simply providing large quantities of data to the business is not sufficient. BSM tools should properly filter, aggregate, and analyze the data before there's any hope of their applicability to the business. Yet, most IT organizations simply warehouse vast quantities of transaction data to feed into analysis and intelligence software. This mass of data makes such an analysis very difficult, especially as business needs change. In addition, identifying individual and critical data amongst all the information that IT churns out is akin to finding the needle in a haystack.

IT vs. Business Visibility

Traditional BSM suffers from a classification problem: the people doing the classification of systems and services in a BSM tool are not the same people that architected, designed or developed the systems in the first place. So, as the environment changes, identifying dependencies, discovering new assets, and other routine management activities become burdensome, manual tasks. Fortunately, Web Services are self-describing and can reveal much of the classification for services through simple monitoring and introspection in conjunction with the use of a service registry. Service definitions include classification information which eliminates the manual classification step, especially in environments of business change.

Another problem with traditional BSM is the lack of real-time information which is both understandable and usable to the business. Business intelligence reports often take significant time to aggregate, prepare, and analyze, causing a latency problem that leads to poor business decisions. Organizations duplicate efforts and work with incorrect data. Data warehouses contain only extracted and summarized data, and there is very little possibility of performing *ad hoc* queries to explore business scenarios. The result is a significant disconnect between IT and business, with the resulting loss of real-time business context.

The core problem is one of *visibility*. Business users basically speak a different language than IT personnel. The business wants visibility into KPIs in a way that's relevant to the operation of the business, while IT focuses on the behavior of the systems under their control. As a result, these audiences generally don't see eye-to-eye. The root cause of this disconnect depends on traditional IT visibility approaches, and the sorts of data they provide.

SOA offers an approach to overcoming the limitations of traditional Business Intelligence.

Today's Business Intelligence (BI) tools provide limited insight into the business and some relief for regulatory compliance needs by enabling the understanding of various information assets and how they relate to critical, regulated operations. SOA offers an approach to overcoming the limitations of traditional BI. An architecture that calls for loosely coupled business services that can provide all the intelligence the business requires can satisfy the business's needs for flexible intelligence by leveraging loosely coupled services that abstract heterogeneous data sources. It falls to IT operations and SOA management, therefore, to ensure that the appropriate level of BI flexibility is available to business users across the organization.

To achieve required levels of agility, businesses must have deep, flexible visibility into the operations of their business. They want predictive systems that can help with planning, forecasting, and financial visibility without having to wait for limited, dated BI reports. On a deeper level, companies require a greater connection between business and IT. The language, priorities, and contexts of these two camps have been entirely too separate, even though IT is nothing more than a business resource, just like any other resource the business might leverage to meet its goals. It's fine for business and IT leaders to agree they need better visibility, but they can't even agree on what that visibility *means*.

IV. Service Management with SOA

SOA seeks to address the problem of business and IT context differences by offering a set of best practices that can help companies leverage IT capabilities as business resources in an agile, flexible manner.

The big picture of SOA as Enterprise Architecture seeks to address the problem of business and IT context differences by offering a set of best practices that can help companies leverage IT capabilities as business resources in an agile, flexible manner. Essential to making this vision of SOA work, however, is an approach to management that doesn't distinguish among SOA management, ITSM, and BSM, but rather unifies these disconnected management contexts by unifying the concept of service.

The Enterprise Architects who follow this practice must understand that non-functional requirements are probably more important to SOA management than the functional requirements for achieving flexibility and reuse, and they must therefore architect management and security at an early stage. Therefore, the integration of management tools across the process, service, transaction and component layers are all core elements of SOA management, as they are necessary for achieving both root-cause analysis and business impact analysis.

Furthermore, IT operations managers must understand how loose coupling and service reuse impact how they monitor composite applications today, and also how they'll track changes across service and component layers, maintain IT relationships, and reconcile monitoring information with centralized metadata registries. To these ends, ITSM provides a process-centric integration of the variety of operational tools for implanting change, availability, and release management processes. The bottom line is that if Enterprise Architects are not aware of the reality that exists within IT operations, and similarly, if IT operations isn't keeping up with the latest initiatives around Service Orientation, neither organization will be successful in the long term.

The Power of Abstraction and Convergence of Business Services and IT Services

For companies to successfully leverage IT resources throughout their business, they must have a different way of *thinking* about IT. The only way to achieve agility is for the business to consider *all* IT resources to be loosely coupled services available as the business requires. As a result, the emphasis shifts from the underlying systems and the components that make them work to the

contracted interfaces that abstract where and how the services perform their duties. It's vitally important to SOA that we place services into the business context.

In the technical sense, a service is a contracted interface, but in the business sense, a service is a representation of a resource that is available to the business. In other words, services are in the business manager's toolbox alongside human resources (i.e., people) and physical resources (i.e., things). The critical challenge is figuring out how the business can and should use services in the business, and why.

The secret to addressing these issues with Service Orientation depends on the services, as well as the architecture—and at the core of this secret is in how IT has always dealt with complexity, which is through the power of *abstraction*. In the world of IT, abstraction is a way to simplify the complexities of the technology with simple, yet powerful representations. At the core of SOA is the service abstraction that combines the notion of a business service and an IT service into a single concept that represents arbitrary IT functionality or data to the business. Beneath the abstraction layer, there remains the complexity that IT deals with today. But due to the power of loose coupling, the services available to the business provide whatever value the business requires from them.

The service abstraction layer enables business users to have real-time visibility into the operation of their business. SOA helps to isolate IT from the business, enabling greater flexibility for both IT and lines of business to respond to changes without impacting the other, leading to greater agility. Organizations will be able to use SOA to craft virtualized environments they can leverage to provide differentiated qualities of service over the same infrastructure, allowing for additional efficiencies and capacity management.

Instead of IT and business being two separate camps that don't share a common context, services in SOA act as a kind of translator that enables business and IT to share an appropriate context, where that context consists of the services. In essence, services represent both the requirements of the business as well as the capabilities that IT provides to the business. A properly architected SOA, therefore, brings the two camps together in a way that promotes agility, visibility, and greater operational control over the business.

As with any abstraction, however, there is no magic here. To build such powerful services requires sophisticated management. In fact, companies will not be able to break down the IT/business disconnect until they solve this underlying management convergence problem. Solving the problem, of course, depends upon the successful implementation of SOA, as well as ITSM and BSM.

Furthermore, the service abstraction layer that SOA enables can help solve the problems of BI, enabling business users to have real-time visibility into the operation of their business. The service abstraction helps to unify BSM and ITSM into a single, agile concept of SOA-based BSM, increasing visibility into the operations of the business, proving that Service Orientation is today's enterprises' best bet for resolving the IT/business disconnect.

V. IBM: Comprehensive SOA Management

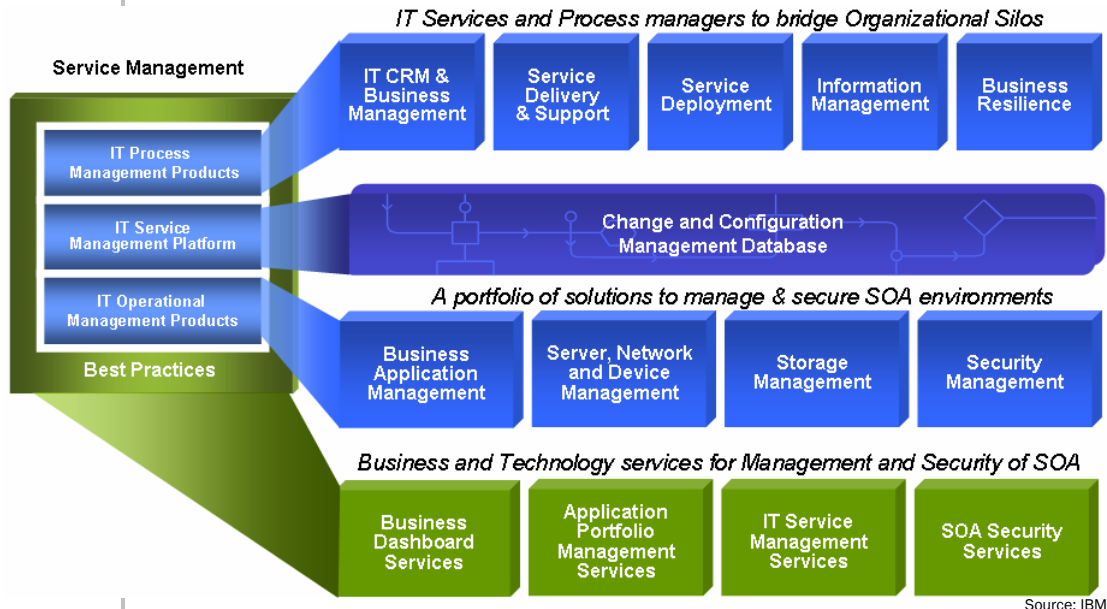
The greatest challenge facing any software vendor that offers SOA management products is being able to bring a comprehensive offering to the market. There are so many different aspects of SOA management that few vendors are up to the challenge. As the largest vendor in the world, IBM is well-positioned to bring such an offering to its customers.

A properly architected SOA brings the business and IT camps together in a way that promotes agility, visibility, and greater operational control over the business.

Managing the emerging, services-based, policy-driven applications and their associated infrastructure are an important focus of Tivoli product offerings.

IBM's SOA management products cut across most of the company's product lines: Tivoli, WebSphere, DB2, and Rational. Through its Tivoli management product line, IBM provides technology for managing the infrastructure required to effectively use SOA. Managing the emerging, services-based, policy-driven applications and their associated infrastructure are now an important focus of Tivoli product offerings. An illustration of IBM's SOA management approach is in the figure below:

IBM's Comprehensive Approach to SOA Management



IBM understands that one factor in the ultimate success of SOA lies in the management of services and infrastructure. Treating services as manageable resources means applying several systems management disciplines, including discovery, monitoring, version and change management, provisioning, policy management, security, service level agreement management, and workload management to services, as well as the underlying applications and systems.

Tivoli products that help companies manage their SOA implementations include *IBM Tivoli Composite Application Manager (ITCAM)* for SOA, which monitors, manages and controls the Web Services layer while drilling down to the application or resource layer to identify the source of bottlenecks or failures and to pinpoint services that take the most time or use the most resources. ITCAM for SOA can proactively recognize and isolate Web Service performance problems, and verify that Web Services are available and performing to specification. This product also provides alerts, reporting, automated service mediation, and visualization of Web Service flows as they cross the enterprise.

The Tivoli product line also helps enterprises deal with the security issues that SOA implementations face. Such security solutions must secure user interactions as well service interactions. Security management must also provide unified customer views for composite applications built from services, and maintain the end-to-end user context.

The Tivoli approach to SOA security provides the infrastructure to leverage security itself as services. This "security services layer" is an integral part of

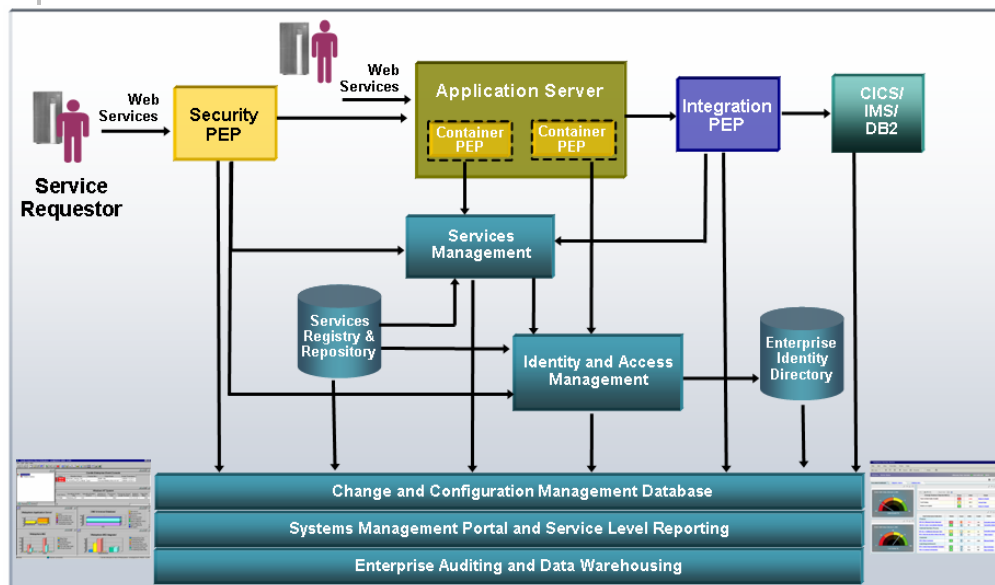
The Tivoli approach to SOA security provides the infrastructure to leverage security itself as services.

IBM's approach to SOA management. The IBM Tivoli security products that deliver the security services view for SOA include *IBM Tivoli Access Manager for e-business* (TAM eb), *IBM Tivoli Access Manager for Business Integration* (TAM BI), and *IBM Tivoli Federated Identity Manager* (TFIM).

TAM eb allows for authentication and authorization of requests, and TAM eb and TFIM combine to offer core authentication services for HTTP, SOAP, MQ and message-based clients, and supports open standards such as SSL, WS-Security, XML Digital Signatures, XML Encryption and SAML. TAM BI delivers end-to-end policy-driven security management for WebSphere MQ (MQSeries) transactions, and supports authentication, access control and non-repudiation for MQ enabled SOA environments. TFIM then builds on TAM eb to deliver integrated security management for Web Services.

TFIM also delivers a Policy Enforcement Point and Policy Decision Point for SOA. As a Policy Decision Point, TFIM integrates authentication services across diverse application platforms and protocols using WS-Trust, allowing for a single, consistent security policy regardless of the underlying transport protocol. In addition to the Tivoli security products, the IBM WebSphere DataPower SOA Appliances are purpose-built network devices that simplify, secure, and accelerate Web Services deployments. The Tivoli system management and IAM products are only a part of IBM's SOA management offering. In fact, several of IBM's product lines coordinate to offer comprehensive SOA management capabilities, as shown in the figure below:

IBM's SOA Management Ecosystem



Source: IBM

Central to this SOA management ecosystem is the *IBM Tivoli Change and Configuration Management Database* (CCMDB), which automates process execution, simplifies architectural complexity and helps reduce incident and problem management costs. The CCMDB utilizes DB2 database technology, and also enables open federation based on DB2 as well as WebSphere. The CCMDB also coordinates with the *WebSphere Service Registry and Repository*, which supports a discovery library for SOA metadata across the enterprise.

Core to this comprehensive approach to SOA management is the *IBM IT Service Management Platform*, which is a platform for data, workflow and policy integration across IT management processes. It provides automated process execution, real-time task configuration and parallel execution, and real-time monitoring and reporting. The IT Service Management Platform includes automated, preconfigured and customizable process workflows for the change and configuration management processes.

IBM is also developing new offerings, based on technology from IBM Research and collaboration between its Tivoli and Rational product groups, for Web Services relationship discovery, visualization, monitoring and management. These new offerings include *IBM Web Services Navigator*, which is an Eclipse-based visualization technology for Web Services. It provides Web Services navigation and monitoring capabilities with visual feedback to identify relationships, extract patterns and highlight problems.

Augmenting the Web Services Navigator is *IBM Tivoli Monitoring for Web Services*, which includes the IBM Web Services Navigator and incorporates additional Tivoli technology. This tool helps architects that are working on Web Services-based applications, and also helps IT operations managers understand Web Services relationships, flows and message content.

VI. The ZapThink Take

As organizations make progress with SOA, they quickly realize that the promise of SOA is broader than simply providing new interfaces to existing systems and processes. Rather, SOA promises to become the *de facto* approach to flexible, agile Enterprise Architecture across all aspects of the business/IT relationship. As this comprehensive vision for SOA evolves, managing the SOA initiative evolves as well. Managing service interfaces is only the first step; in fact, SOA management impacts all of IT and business management, and IT Service Management and Business Service Management approaches will likewise necessarily leverage SOA.

This expansion of SOA throughout the organization has several significant implications. First and foremost, the transition to SOA involves many cultural and political changes. Enterprise Architects have a broader scope of responsibility, and must interact with network operations personnel on a deeper level than before, and management activities must be far more comprehensive than traditional, siloed IT environments required. Secondly, enterprises must adopt a holistic view of management that covers the entire business/IT spectrum. To implement this new vision of management, IBM has both the scale and scope necessary to provide the comprehensive SOA management capabilities that organizations need as they migrate to enterprisewide SOA.

SOA promises to become the de facto approach to flexible, agile Enterprise Architecture across all aspects of the business/IT relationship.

IBM has both the scale and scope necessary to provide the comprehensive SOA management capabilities that organizations need as they migrate to enterprisewide SOA.

Copyright, Trademark Notice, and Statement of Opinion

All Contents Copyright © 2006 ZapThink, LLC. All rights reserved. The information contained herein has been obtained from sources believed to be reliable. ZapThink disclaims all warranties as to the accuracy, completeness or adequacy of such information. ZapThink shall have no liability for errors, omissions or inadequacies in the information contained herein or for interpretations thereof. The reader assumes sole responsibility for the selection of these materials to achieve its intended results. The opinions expressed herein are subject to change without notice. All trademarks, service marks, and trade names are trademarked by their respective owners and ZapThink makes no claims to these names.

About ZapThink, LLC

ZapThink is an IT advisory and analysis firm that provides trusted advice and critical insight into the architectural and organizational changes brought about by the movement to XML, Web Services, and Service Orientation. We provide our three target audiences of IT vendors, service providers and end-users a clear roadmap for standards-based, loosely coupled distributed computing – a vision of IT meeting the needs of the agile business.

ZapThink helps its customers in three ways: by helping companies understand IT products and services in the context of Service-Oriented Architecture (SOA) and the vision of Service Orientation, by providing guidance into emerging best practices for Web Services and SOA adoption, and by bringing together all our audiences into a network that provides business value and expertise to each member of the network.

ZapThink provides market intelligence to IT vendors and professional services firms that offer XML and Web Services-based products and services in order to help them understand their competitive landscape, plan their product roadmaps, and communicate their value proposition to their customers within the context of Service Orientation.

ZapThink provides guidance and expertise to professional services firms to help them grow and innovate their services as well as promote their capabilities to end-users and vendors looking to grow their businesses.

ZapThink also provides implementation intelligence to IT users who are seeking guidance and clarity into the best practices for planning and implementing SOA, including how to assemble the available products and services into a coherent plan.

ZapThink's senior analysts are widely regarded as the "go to analysts" for XML, Web Services, and SOA by vendors, end-users, and the press. Respected for their candid, insightful opinions, they are in great demand as speakers, and have presented at conferences and industry events around the world. They are among the most quoted industry analysts in the IT industry. ZapThink was founded in November 2000 and is headquartered in Baltimore, Maryland.

ZAPTHINK CONTACT:

ZapThink, LLC
108 Woodlawn Road
Baltimore, MD 21210
Phone: +1 (781) 207 0203
Fax: +1 (786) 524 3186
info@zapthink.com

