Pursuing operational excellence in IT

How a service-oriented operating environment for IT can help accelerate business and IT alignment

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Introduction

The persistent focus on aligning IT operations with business objectives has become a mantra for CIOs in virtually every industry. But actually achieving that alignment can be a challenging proposition—especially since CIOs are also being asked to help the business innovate while driving cost out of day-to-day operations. In fact, in a worldwide IBM study of CEOs, 78 percent indicated that they believe integrating business and technology is fundamental to driving innovation[1]. As a result, today's CIOs are expected to:

- *Drive operational excellence—by becoming more responsive to the needs of the business, increasing the effectiveness of IT in supporting business processes, and improving governance and risk management*
- *Accelerate growth—by helping to deliver new products, services and processes and support for new business models, with the goal of gaining some form of unique competitive advantage*
- *Optimize investments—by managing resources more effectively, to help shift costs from simply maintaining the business to driving innovation in business models, products and processes*
- *Make IT a change agent—by using new technologies to support alternative business strategies that leverage worldwide resources for maximum efficiencies, helping to fund new business investments*
- *Show corporate commitment to be socially and environmentally responsible—through an emphasis on more efficient uses of energy*
- *Ensure that the IT and application environment is secure and compliant with regulatory requirements*

Highlights

The goal is to enable competitive advantage while also reducing operational cost and risk.

CIOs rank providing a flexible technology infrastructure, upgrading legacy systems, preventing security breaches and achieving business resilience among their top objectives.

Operationally, CIOs will need to set new priorities for managing IT and for optimizing and integrating a long list of technologies if they are to succeed. The goal is to enable competitive advantage while also reducing operational cost and risk—which means CIOs must govern a dynamic, resilient, responsive and available IT operation that is secure, compliant and cost-effective.

Striving for operational excellence

From a best practices point of view, we're talking about achieving operational excellence in IT. And that calls for implementing a well structured enterprise architecture—an approach that recognizes the need to align IT with business needs, rather than attempting to align business with IT needs. It means supporting business needs with the appropriate levels of IT resources, governance and risk management.

That typically requires developing and managing a flexible technology infrastructure, improving the quality of service delivery and preventing security breaches and business interruptions. When asked in a 2007 survey about developing the ideal IT organization, CIOs most frequently said they were looking to provide more flexible and agile systems and to upgrade legacy systems to eliminate security flaws[2].

At the same time, the continuing trend toward economic globalization has challenged IT organizations to deliver services in a globally distributed environment—across diverse cultures and multiple time zones. And as nighttime rolls its way around the globe, it often finds countless numbers of business and IT executives lying awake, worrying about maintaining 24/7 operations and an onslaught of compliance issues. What can help them sleep better?

Operational excellence in IT can pave the way for aligning IT capabilities to business objectives—and, in turn, delivering increased benefit from IT—by:

- *Reducing complexity—through standardization and consolidation, thereby reducing operational costs, freeing IT budget dollars to be spent on new capabilities*
- *Developing shared services capabilities—which can be leveraged throughout the enterprise*
- *Creating a dynamic and responsive IT environment—accelerating deployment of new capabilities while managing costs and reducing complexity*
- *Increasing resource utilization—and improving application availability*
- *Automating manual processes—to reduce operational costs and minimize operating errors*
- *Reducing downtime and improving audit reporting—to help reduce associated risk and mitigate disruption to business*

Companies with a "strategic CIO" use IT more extensively to innovate new products and services and share technology more effectively across the enterprise.

In fact, the Center for CIO Leadership recently reported that companies with a "strategic CIO" use IT more extensively to innovate new products and services and share technology more effectively across the enterprise[3].

Developing an enterprise architecture as a foundation for operational excellence

Many CIOs are struggling with questions about where—and how—to begin the process of working toward operational excellence in IT. Meanwhile, many experts agree that the best way to start is by developing an enterprise architecture. In the simplest terms, an enterprise architecture is "a conceptual blueprint that defines the structure and operation of an organization." The intent of an enterprise architecture is to determine how an organization can most effectively achieve its current and future objectives[4].

If a company's business strategy is tied to improving the efficiency of customer service, its enterprise architecture should provide a foundation that supports improving the efficiency of customer service.

According to business transformation communications consultant S.E. Slack, "What's interesting about enterprise architecture is that, while it obviously must relate to the information systems in an organization, the emphasis is actually much more closely tied to business optimization techniques[5]." The bottom line: An enterprise architecture must be designed to support an organization's specific business strategies. So if a company's business strategy is tied to improving the efficiency of customer service, its enterprise architecture should provide the foundation for an IT strategy that supports improving the efficiency of customer service. In short, it's important to understand exactly what it is you're trying to achieve before you begin selecting automation technologies—since automation can make both good and bad things happen faster.

Beyond those broad parameters, an enterprise architecture can help a CIO:

- *Define a set of interacting systems and processes that are reusable, reliable, flexible, scalable and secure—and which support business processes and services*
- *Create a set of blueprints for adding new infrastructure and systems—and for maximizing the value of current systems*
- *Accelerate the speed of delivering solutions to the business, and new business solutions to customers*
- *Reduce the cost of business operations by making business processes more efficient while also optimizing IT acquisition, support, maintenance and training costs, and by leveraging the reuse of IT resources*
- *Leverage enterprise knowledge through the consolidation and optimization of processes, data, business functions and other resources*

But while it's easy to see that developing an enterprise architecture can be a solid first step toward achieving operational excellence in IT, it's important to recognize that all approaches to enterprise architecture are not created equal.

Highlights

One approach establishes an enterprise architecture which leverages service-oriented principles and provides businesses with the flexibility, responsiveness and efficiency they need to succeed.

One approach, based on the concept of creating a highly structured, service-oriented IT operating environment, establishes an enterprise architecture which leverages service-oriented principles. It offers CIOs a blueprint for a new kind of IT infrastructure that provides businesses with the flexibility, responsiveness and efficiency they need to succeed. And it can help businesses speed time to value, reduce costs, scope and manage large projects more easily, and transform the corporate IT infrastructure into a powerful instrument for driving an organization's business objectives.

A service-oriented approach to the IT operating environment

The model that IBM recommends for this type of IT operating environment lays the foundation for establishing an enterprise architecture. By employing sets of well defined, interacting services, the model prescribes and positions the types of functions and capabilities necessary for organizations to effectively support their business objectives.

The construction of this IT operating environment relies on the concept of services orientation to ensure coverage of all IT functions. The resulting components—most of which are typically defined as services—are a combination of capabilities (hardware, software, and technical expertise) that can be easily and quickly assembled to create solutions for providing businesses with the flexibility, responsiveness and efficiency they need to adapt quickly to changing demands (Figure 1).

Business and Business Optimization Services

Supports enterprise business processes and goals through the business' functional services and facilitates better decision making with real-time business information

Development Services

Integrated environment for design and creation of solution assets

Application Services

Modular delivery of business automation

Infrastructure Services

Optimizes throughput, availability and utilization

Management Services

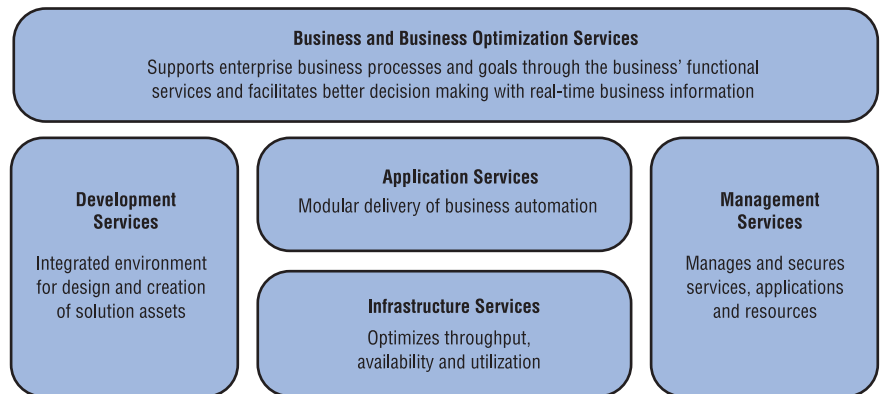Manages and secures services, applications and resources

Figure 1. A service-oriented IT operating environment provides a structured platform for defining sets of services that can be assembled—and reassembled—in multiple ways, to support business processes across the enterprise.

With a service-oriented approach, standardized, reusable components can be assembled into complex solutions in support of complex projects.

As a result, a service-oriented IT operating environment makes it possible to assemble complex solutions in support of complex projects—all based on a consistently described functional scope that takes advantage of standardized, reusable components with well defined interfaces and interactions. What's more, the IT operating environment approach to developing an enterprise architecture allows an organization's IT operations to be modeled along the same guiding principles as its overall business operations.

For example, it's often extremely difficult to bridge the gaps between business requirements and IT infrastructure requirements when developing complex distributed applications. The fundamental problem associated with designing and implementing a business-aligned infrastructure stems from the fact that business requirements don't translate directly into an infrastructure. The process typically requires a careful multi-step translation into the proper architecture with standardized building blocks. But the concise methodological approach that's a hallmark of an enterprise architecture makes it far easier to successfully manage such complexity.

The IT operating environment takes the services-oriented approach a step closer to uniting the different organizational units of responsibility among business, applications and infrastructure.

In an effort to cost-effectively manage the ever-increasing complexity of today's business environment, much of the IT community has embraced a services-oriented approach to developing solutions that define and deliver reusable service components. Those well defined service components—which are interoperable because they're based on a common set of interface definitions—can then be combined in various ways used to create new solutions, as long as they all comply with the requirements of a carefully structured architecture.

By focusing on providing a solid structure to support that flexibility, the IT operating environment takes the services-oriented approach a step closer to uniting the different organizational units of responsibility among business, applications and infrastructure. And as a result, it's positioned to succeed in bridging the gaps between business and IT infrastructure requirements—where other approaches have failed.

A modular approach supports evolving business needs

With its modular components, this service-oriented approach to an IT operating environment can be implemented gradually—as a company's needs and technology evolve. But in the short term, it can begin to help businesses speed time to value, reduce costs and uncover new opportunities. And in the long run, it can help transform corporate IT infrastructures into powerful, flexible instruments to drive an organization's business objectives.

Using this model, companies can build an infrastructure that lowers their total cost of ownership, while maximizing the value of existing IT investments. It gives organizations an opportunity to enhance their systems without having to "rip and replace" hardware or software, helping to save money and minimize disruption and making it possible to change their infrastructure as quickly and as often as business needs dictate.

Highlights

A service-oriented IT operating environment can help companies address both regulatory compliance and data security issues more easily and cost-effectively.

A service-oriented IT operating environment can help companies grappling with ever-increasing compliance and data security requirements to ensure risk is strategically managed across the board—thanks to a defined enterprise architecture governance process and a structured positioning framework. The broad end-to-end view of an organization's needs and process that's afforded by an enterprise architecture can offer the unique insight necessary to identify potential security weaknesses and compliance issues.

For example, as the demand for information continues to grow across the enterprise, it stands to reason that many more applications using common information services end up being exposed to larger user communities. Consequently, it often falls upon architecture developers to identify potential security exposures. But without a well documented architecture that's based on a firm foundation, it can become nearly impossible to track data throughout the infrastructure and effectively establish the necessary means of authentication and protection—such as firewalls and single sign-on systems.

Consider the plight of a global financial management business handling large volumes of sensitive and personal information. The company needs to maintain security levels across borders and many departments, but providing appropriate personnel with access to that information is a critical prerequisite to keep the business running. Still, as the company changes and grows, so too does the risk of unauthorized access to sensitive data. An enterprise architecture, supported by a service-oriented IT operating environment, would make it possible for the company to avoid potential security risks cost-effectively.

This approach can help CIOs enable greater innovation and deliver business value from IT by tightening the alignment of IT investments to business goals.

At the same time, this highly structured approach can help CIOs enable greater innovation and deliver business value from IT by tightening the alignment of IT investments to business goals and reducing the risks and costs of operating a secure, resilient business—through the effective application of IT governance.

Creating a stable, dynamic, flexible and efficient IT environment

Successful CIOs know it's their job to provide reliable IT services in ways that contain costs and maximize their existing investments. At the same time, they must streamline and secure IT operations across the enterprise—to provide the flexibility and responsiveness necessary to achieve business objectives.

Leading-edge solutions, such as virtualization, consolidation, application performance management, and IT outsourcing, can play a key role in achieving cost control, higher returns on investment and technical innovation. Virtualization, for example, can offer a significant total cost of ownership benefit. But implementing it more widely across the IT infrastructure—across server, storage, network and workstation elements—can also provide important incremental benefits in areas of availability, business resiliency and increased access to information.

Energy efficiency in the data center, as another example, is becoming increasingly important to all levels of upper management—along with boards of directors and stockholders. A comprehensive solution that encompasses the infrastructure of the data center—including air-conditioning and uninterruptible power supplies—is critical to developing a "green" data center, as is collaboration with governments and utilities that provide important incentives for energy efficiency. It's an approach that can both save money and demonstrate a company's social responsibility.

Highlights

A service-oriented IT operating environment can help produce ongoing incremental improvements in ROI, cost control and technical innovation.

Meeting business needs while controlling costs

IT is continually challenged by increasingly complex infrastructures, business realignments, new technologies and regulatory compliance mandates. A typical enterprise might employ more than 1,000 business services—including online customer account inquiry, orders, shipping, receiving and credit authorization—all running over a complex infrastructure within a multi-sourced environment that's marked by many technological, process and organizational silos. These silos typically inhibit responsiveness, availability and innovation.

A service-oriented IT operating environment can help produce ongoing incremental improvements in ROI, cost control and technical innovation because its interoperable "building blocks" lay the foundation required for open communication between business and IT—which is key to improving IT and application infrastructure efficiency and effectiveness and accelerating the design and deployment of infrastructure solutions. (Figure 2)

For example, establishing common standards in either infrastructure or application consolidation projects can drive down operational and capital costs—especially when accompanied by the identification of open standards which may be used for multiple business solutions. And in such situations, a services-based IT operating environment can provide a unique foundation for virtually all the solutions in an enterprise.

Business Services

Application Services

Development Services

Container Services

Server Services

Infrastructure Optimization Services

Management Services

Storage Services

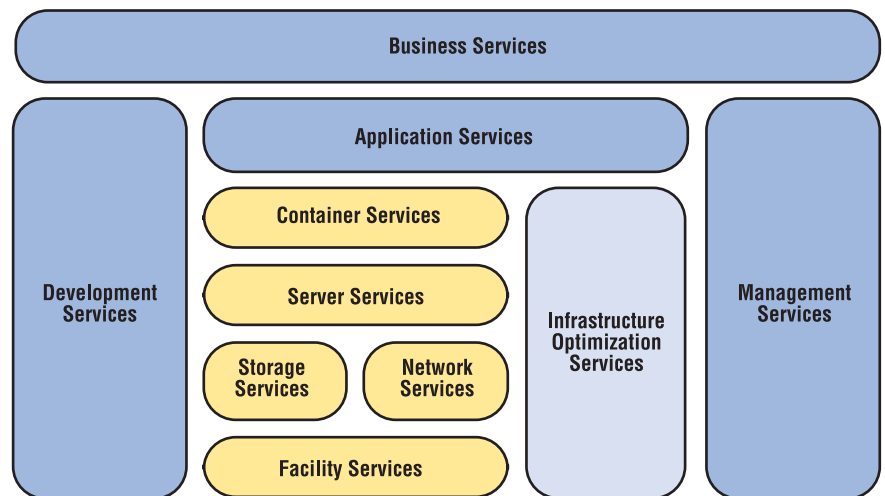**Network Services**

Facility Services

Figure 2. The interoperable "building blocks" that make up a service-oriented IT operating environment can help improve IT and application infrastructure efficiency and effectiveness and speed the deployment of infrastructure solution design.

What's more, because IT operations can be labor-intensive and prone to error, CIOs often end up having to shift IT spending from development and innovation to operations. In many IT environments, upwards of 70 percent of the total IT budget can be consumed by maintaining the current environment. To help break down technological, process and operational silos and create a more flexible, responsive environment, many companies today are turning to automated service management as a requirement for doing business.

Ensuring quality of service

Governance initiatives can be readily supported in a properly constructed IT operating environment—helping CIOs address quality of service requirements.

Because implementing service management often forces a shift in the way people work, it can pose significant technical and organizational challenges. In order to integrate the people, processes, technology and information necessary to achieve the goals of the business, effective governance—which facilitates effective decision-making—must be put in place. Importantly, a services-oriented governance framework can help ensure that IT decisions are consistent with business vision, values and strategies—and that IT delivers maximum value to the business.

A properly constructed IT operating environment can support governance initiatives by helping to define end-to-end roles and responsibilities as they relate to specific functions and create an escalation chain for resolving problems/disputes while automating and streamlining business and IT processes. At the same time, it can help senior management identify and anticipate critical "what-if" scenarios and respond to business opportunities more quickly.

For example, to help manage the challenges of running a 24/7 global enterprise, a large online auction site has implemented an integrated business service management solution that automates monitoring of the operating environment, identifies issues that could cause service problems and leverages autonomic, self-healing capabilities to recover from service issues automatically. The solution also enables staff to identify spikes in interest for a specific item or category and dynamically adjust its system resources to support the increased usage. The company can replicate changes across its Web site quickly and consistently so that new services and features are available faster.

By providing the framework for establishing a security policy infrastructure, a service-oriented operating environment allows companies to address and resolve critical security issues.

Safeguarding assets

Security issues continue to generate increasing levels of concern in enterprises around the world—especially since IT plays a central role in protecting brands, shielding data and assets, enabling end-user access and usability, and managing insider and external threats. By providing the framework for establishing a security policy infrastructure, a service-oriented operating environment allows companies to address and resolve critical security issues in the context of their business and IT needs. (Figure 3)

Business Services

Development Services

Application Services

Infrastructure Services

Security Policy Infrastructure

Business Security Services

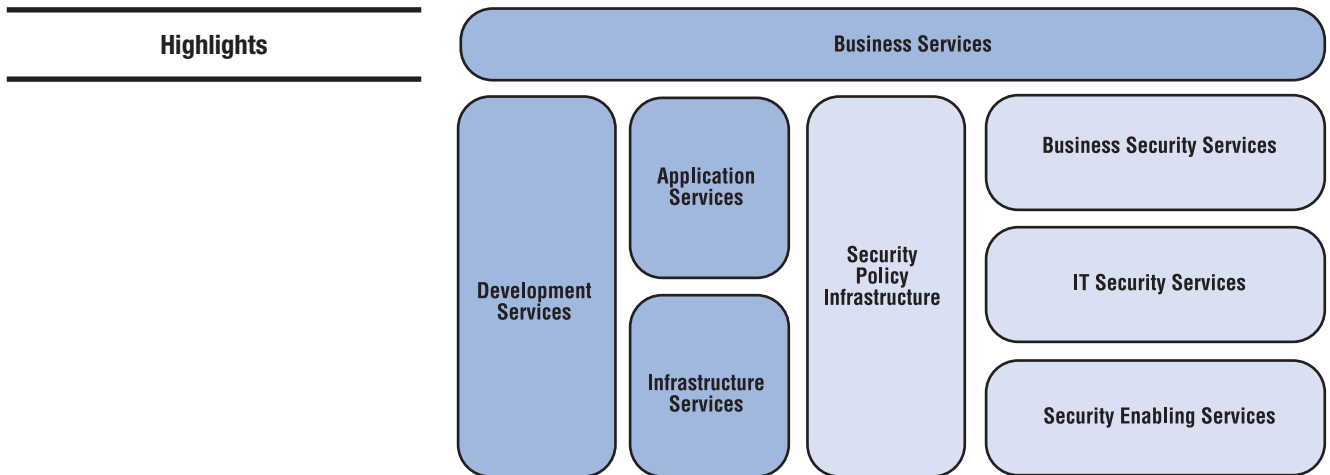IT Security Services

Security Enabling Services

Figure 3. A service-oriented IT operating environment can help companies address and resolve security issues without losing sight of their business and IT needs.

The resulting security policy infrastructure could include business security services for such functions as compliance and reporting, data protection and privacy control, identity and access, and trust management. In addition, it could include IT security services for authentication, authorization, confidentiality and audit, while a set of security enabling services would be designed to manage and secure service resources.

Conclusion

When it comes to driving innovation, there's little doubt that CIOs will continue to play an increasingly important role in their organizations' quest to gain a competitive edge in the marketplace. In fact, according to Gartner, "Eighty-three percent of [CIOs] predict significant change in their enterprises over the next three years—change such as implementing new products and opening new markets. The success of these initiatives will determine future roles and responsibilities for the CIO and the IT organization[6]."

Supporting new products, new markets and other business changes will keep the CIO playing an important role in the organization's success.

CIOs can help enable competitive advantage while reducing operational risk—with a dynamic, resilient, responsive and available IT operation that is secure, compliant and cost-effective.

By embracing the tenets of operational excellence in IT, CIOs can help enable competitive advantage while also reducing operational risk—by governing a dynamic, resilient, responsive and available IT operation that is secure, compliant and cost-effective. And while the overall strategic goal may be to align IT with business needs, success will likely come most easily to those CIOs who take a structured, service-oriented approach to achieving operational excellence in IT.

The service-oriented model for the IT operating environment offers precisely that kind of approach. It allows IT to effectively support the enterprise's business objectives by modeling the organization's IT operations along the same guiding principles as its overall business operations. In addition, it establishes an enterprise architecture, which leverages a services-orientated approach to developing and deploying applications and provides businesses with the flexibility, responsiveness and efficiency they need to succeed.

For more information

To learn more about developing and implementing a service-oriented IT operating environment, and how IBM can help your organization better align IT operations with business objectives, please contact your IBM marketing representative or IBM Business Partner, or visit the following Web site:

ibm.com/cio

[1] IBM, *Expanding the Innovation Horizon: The Global CEO Study*, 2006

[2] IBM, *IBM Market Intelligence: CIO Challenges and Aspirations*, 2007

[3] Center for CIO Leadership, *The CIO profession: driving innovation and competitive advantage*, 2007

[4] SearchCIO.com, Definitions, http://searchcio.techtarget.com/sDefinition/0,,sid182_gci1081274,00.html, June 2007

[5] S.E. Slack, *Enterprise architecture essentials, Part 1: Enterprise architecture viewpoints: What's best for your organization?* IBM.com. developerWorks, July 2007

[6] Gartner, Inc., *Making the Difference: The 2008 CIO Agenda*, January 2008