Networked Systems Management Scenario: The Enterprise and Beyond

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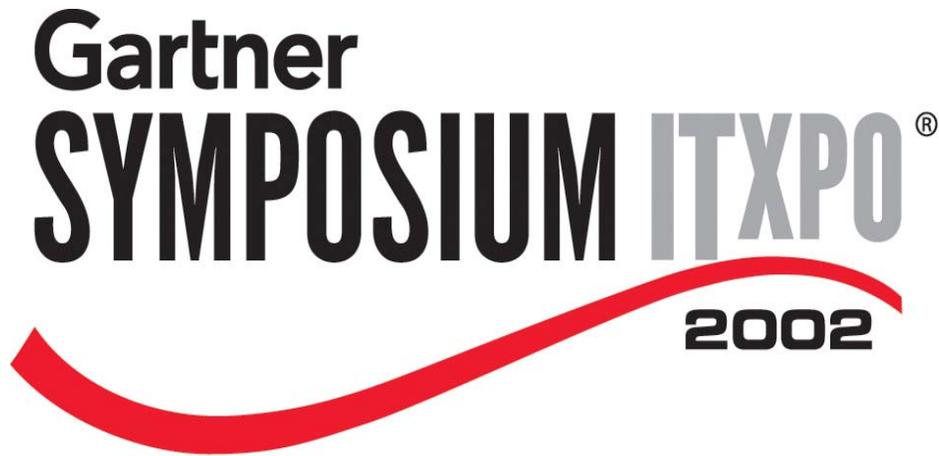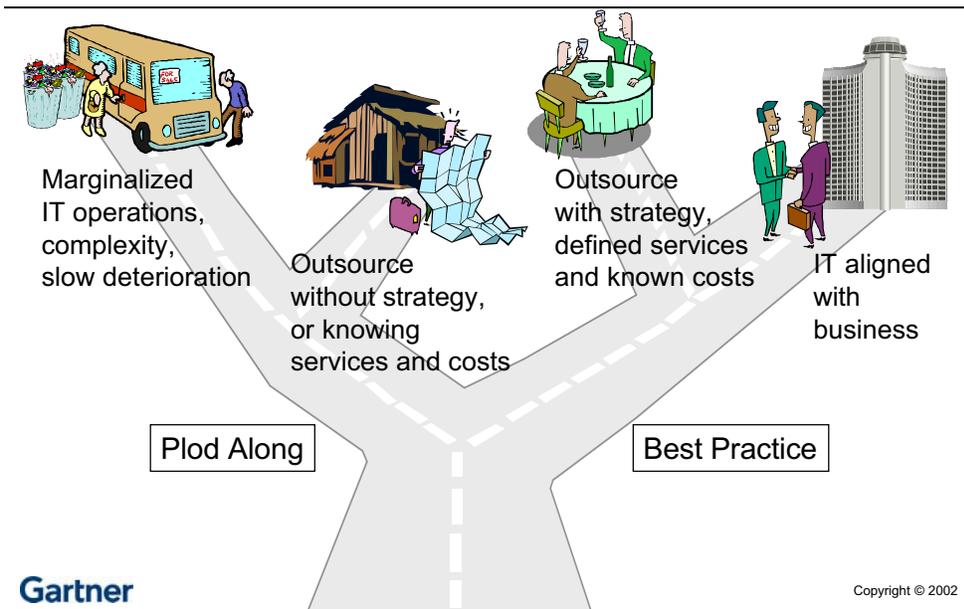
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Milind Govekar

Strategic Planning Assumption: By 2007, IS organizations that do not shift to a service provider model will suffer at least a 50 percent drop in budget responsibility within enterprises (0.6 probability).

IT Operations at a Cross Roads

Marginalized IT operations, complexity, slow deterioration

Outsource without strategy, or knowing services and costs

Outsource with strategy, defined services and known costs

IT aligned with business

Plod Along

Best Practice

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For IT operations, user wants and needs are simple to describe but hard to achieve. Unfortunately, we are a long way from the business desire to have IT as a utility—something that is agile, always on, and priced and provisioned like a commodity. All too often, the business feels that it pays too much and waits too long for mediocre services. IT operations' challenges are to deploy new technologies and application architectures in support of evolving business strategies, while keeping the current environment (which is the sum total of all previous initiatives) up and running. At the same time, IT is facing staffing constraints which limit internal project capabilities. While the business wants a simple definition of services in its own terms and quick fulfillment, IT operations is stuck with managing the details of an evolving and complex IT infrastructure. This mismatch between desires and realities sets business management up for disappointment, and it places IT operations at a cross roads. One path is to muddle along with poor communications and little alignment with the business. This approach frequently results in the slow erosion of staffing and project capabilities, and a constant exposure to nonstrategic outsourcing. Another path is to develop an architected approach to IT operations and infrastructure deployment that is aligned with the business. This path leads to more efficient and agile IT operations; increased ROI on IT; stable or improving IT operations' staffing and the opportunity for strategic, modular outsourcing to supplement internal staff.
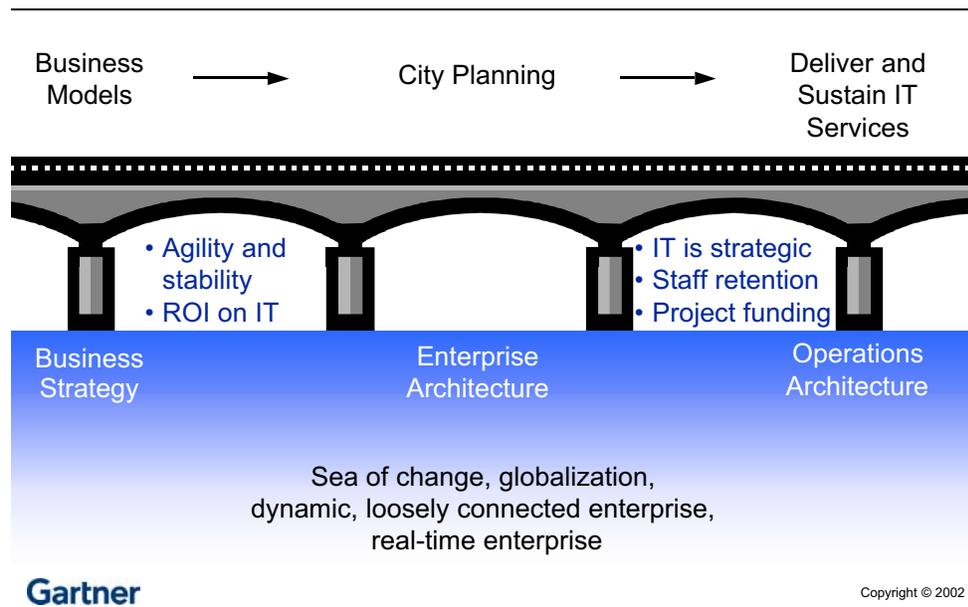
Key Issues

1. **Which strategies and best practices foster business-aligned enterprise management?**

2. **Which vendors, products and technologies enable business-aligned enterprise management?**

This year, the network and systems management (NSM) scenario theme is aligning IT operations with the business. We find that this has as much to do with having the right organizational structure, well-defined processes, and an ongoing dialogue with the business areas about services as it has to do with vendors and technology. Focusing on first things first, we begin with the architectural foundation that IT operations needs to deliver a business service.

Business innovation brings a need to sustain IT operations in an environment that is moving faster, is more outwardly focused, and comprises both internal and external services. The challenge for the IT operations group is to deliver and manage an IT infrastructure that is both reliable and capable of sustaining a high rate of change. The IT operations group can deliver on these two seemingly contradictory attributes only through careful IT infrastructure design and implementation of key management processes. Ultimately, we all want to improve the level of management automation through the deployment of NSM tools. Once we have defined the foundation that is required for tool deployment, we will discuss the NSM market, vendors, current technology and emerging technology, all with a focus on running IT operations as a business that is aligned with enterprise objectives.

Key Issue: Which strategies and best practices foster business-aligned enterprise management?
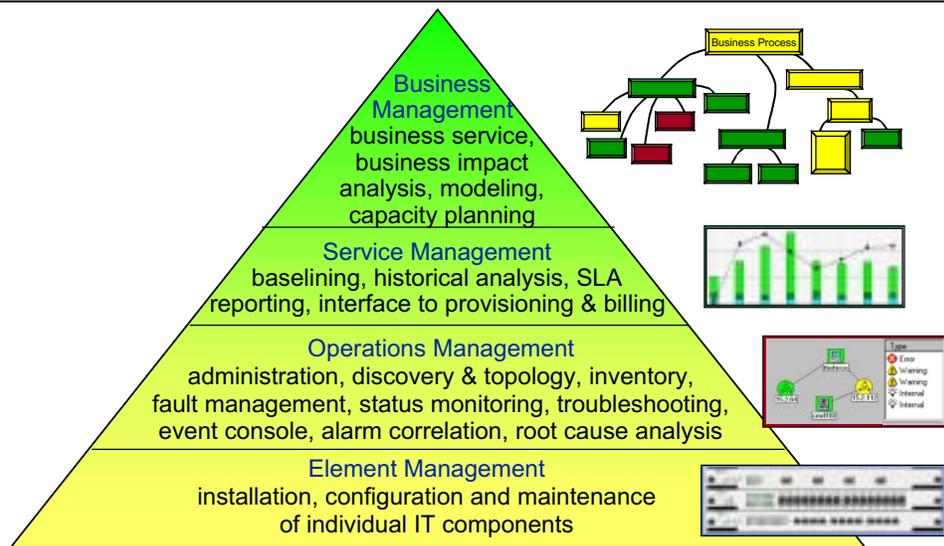
Benefits of Linking IT With Business

Business Models → City Planning → Deliver and Sustain IT Services

- Agility and stability
- ROI on IT

- IT is strategic
- Staff retention
- Project funding

Business Strategy

Enterprise Architecture

Operations Architecture

Sea of change, globalization, dynamic, loosely connected enterprise, real-time enterprise

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With the deepening relationship between IT and the business process, IT architectures have a big impact on the ability of the business to compete and change. Most organizations find it difficult to implement new outward-facing business processes. They may find their business logic is hidden in legacy applications that are needed to sustain established operations. An architected approach to IT operations is needed in order to balance the requirement for a stable IT infrastructure with the agility needed to move the business ahead in a rapidly changing, virtual and dynamic environment. Operations architecture will not just enable and stabilize the business transformation, but will be a key part of the enterprise architecture. This will enable enterprises to lower their cost of operation and improve the availability and performance of a business process in a rapidly changing, virtual and dynamic environment. Defining operations architecture can help break down the walls that exist between enterprise architects, developers and operations. An IT operations architecture can minimize complexity, and improve manageability. Adopting a sound operations architecture will help an overall enterprise architecture to be sustainable and agile. The business benefits are agility, stability and an improved ROI on IT. IT operations' benefits are in a more strategic position within the enterprise, providing improved staff retention and monetary support for IT infrastructure projects.

Tactical Guideline: The IT infrastructure must be managed in the context of the business services it enables. An IT component-specific approach to management does little to foster alignment with business units, as they are concerned with overall end-to-end availability and performance.

Exploiting NSM Technology to Link IT Infrastructure With Business

Business Management
business service, business impact analysis, modeling, capacity planning

Service Management
baselining, historical analysis, SLA reporting, interface to provisioning & billing

Operations Management
administration, discovery & topology, inventory, fault management, status monitoring, troubleshooting, event console, alarm correlation, root cause analysis

Element Management
installation, configuration and maintenance of individual IT components
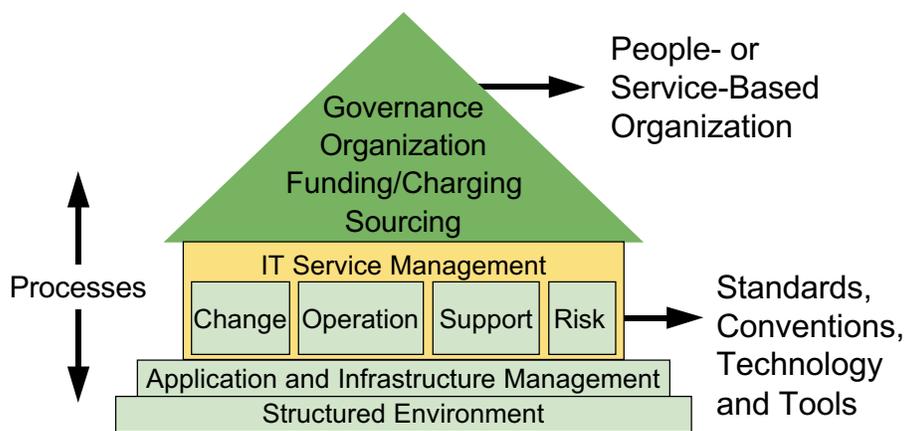
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One of the primary goals of an IT operations architecture is to automate management. Automated management can reduce manual labor which can reduce costs and increase the scale of possible IT infrastructure deployments. Automation also can improve the availability and agility of IT infrastructure. The early NSM market focused on element management — instrumenting infrastructure components for monitoring and simple configuration tasks. The stated goal was to make IT operations more efficient. The next generation of tools provided for operations management, which extends basic monitoring with auto discovery and topology mapping, as well as intelligent correlation of events for problem resolution. All of this helps IT manage the technology, but does nothing to ensure that the technology is delivering what the business needs. Service management focuses on reporting and management more at the application layer, for services that are meaningful to the business customer. Business management extends service management to include management that is driven by business impact analysis. Most of what is new in NSM is focused on attempts to develop service- and business-level management. Most of what is missing in NSM is also related to service- and business-level management.

Action Item: Implementing lower-layer element and operations management is required to build a strong foundation for the higher-layer service and business management.

Tactical Guideline: IT operations Architecture is composed of a service-based organizational structure, defined processes, a structured IT environment and management tools.

What Will It Take? An Architected Approach to IT Operations

Governance
Organization
Funding/Charging
Sourcing

People- or
Service-Based
Organization

Processes

IT Service Management

Change | Operation | Support | Risk

Application and Infrastructure Management
Structured Environment

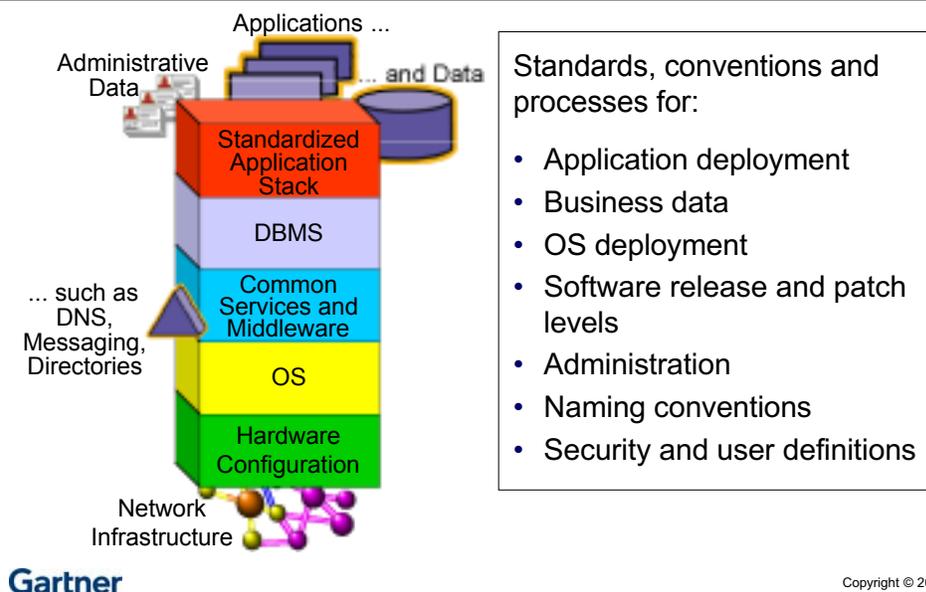Standards,
Conventions,
Technology
and Tools

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An IT operations architecture is the foundation on which NSM capabilities should be built. Attempting a large-scale or deeply functional NSM implementation without this foundation will most likely lead to wasted effort and failure. The operations architecture fundamentally consists of three elements: organization structure, operational processes and a structured environment. Organizational structure is focused on governance and people. The IT operations group must organize in a way that enables ongoing communication with the business on services and costs, and also enables a sustained focus on IT infrastructure projects. In addition to having the right organizational structure, any operations group (internal or external) striving to deliver an efficient and available IT foundation for business processes must overcome challenges in two areas: process and environmental complexity. Well-designed and documented processes for IT infrastructure build and service management are a prerequisite for NSM automation. Enterprises increasingly have to consider the effects of architectural complexity and particularly its impact on manageability. Inevitably, increased complexity leads to poor manageability, thereby resulting in increased total cost of ownership and poor quality of service. Complexity can be minimized through the definition and deployment of a structured environment that is based on standards, conventions, technology and tools.

Strategic Planning Assumption: Through 2006, IT operations groups that define a structured environment for new system deployment will improve time to deployment by 30 percent, increase availability by 10 percent and reduce operations costs by 20 percent (0.8 probability).
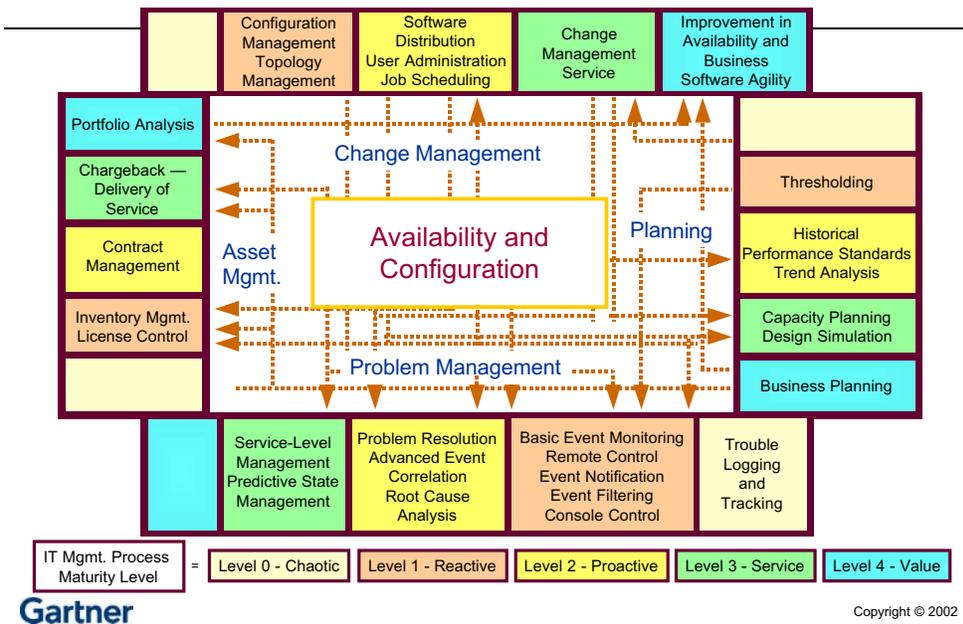
Defining a Structured Environment

Applications ...

Administrative Data

... and Data

Standardized Application Stack

DBMS

Common Services and Middleware

... such as DNS, Messaging, Directories

OS

Hardware Configuration

Network Infrastructure

Standards, conventions and processes for:

- Application deployment
- Business data
- OS deployment
- Software release and patch levels
- Administration
- Naming conventions
- Security and user definitions

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Infrastructure components are largely determined by business need and application architecture. New architectures are typically constructed with a combination of new services (such as Web services) and established infrastructure components (such as databases, servers and network devices). This layering of old and new makes the IT environment very complex. Environmental complexity arises when there is little or no standardization across a set of systems. In a complex environment, operating system images, database instances and application platforms are built on a "custom" basis. There are no economies of scale, no repeatable processes and it is almost impossible to automate. In order to provide a highly available, flexible and efficient IT infrastructure, the IT operations group needs to define and implement a structured environment. It also provides the best possible competitive positioning with respect to external sourcing alternatives. Economies of scale are achieved by defining a limited number of standardized "application infrastructure stacks" that are deployed in a consistent way. Standardized and automated processes can be developed for the ongoing operation of the environment. Rather than attempting a wholesale conversion of all systems to the standards, organizations should instead view new product releases, new application deployments and consolidation projects as opportunities to drive structure into a chaotic environment. *Action Item: IT operations groups should support a structured, automated, lower-cost environment and offer customized systems at a higher cost.*

Strategic Planning Assumptions: Through 2007, enterprises that focus on process development and integration before technological integration will improve NSM implementation time and deployment scope by at least a factor of 3 (0.8 probability). By 2006, process skills will be more important than technology skills for successful enterprise management in the Global 2000 (0.6 probability).

Process Definition and Integration

	Configuration Management Topology Management	Software Distribution User Administration Job Scheduling	Change Management Service	Improvement in Availability and Business Software Agility

Portfolio Analysis			
Chargeback — Delivery of Service		Change Management	Thresholding
Contract Management	Asset Mgmt.	Availability and Configuration	Planning	Historical Performance Standards Trend Analysis
Inventory Mgmt. License Control			Capacity Planning Design Simulation
	Problem Management		Business Planning

	Service-Level Management Predictive State Management	Problem Resolution Advanced Event Correlation Root Cause Analysis	Basic Event Monitoring Remote Control Event Notification Event Filtering Console Control	Trouble Logging and Tracking

IT Mgmt. Process Maturity Level	=	Level 0 - Chaotic	Level 1 - Reactive	Level 2 - Proactive	Level 3 - Service	Level 4 - Value

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The effective delivery of IT operations' services and the provisioning of a structured environment are based on processes. Processes are collections of identifiable and repeatable activities performed directly in support of a service . Operations management processes (e.g., problem management), service development and deployment processes (e.g., build, test, release to production), service planning processes (e.g., relationship management, SLAs) and IT/business alignment processes (e.g., strategic planning, financing) are all required. In a rapidly changing technology environment where management tools often trail behind the introduction of new technology, processes provide stability and ensure quality IT services based on customer requirements. Integration is the single most over-used and misunderstood word in the NSM vocabulary. Integration is claimed by all and delivered by most, but little is integrated beyond simple user interface work and event passing, regardless of the vendor or product. Process integration is critical, but technology is only an enabler of process integration. Integration must first occur within a process and then between processes. Enterprises that can glue their processes together have much higher ROI for their NSM investments and much lower risk of implementation failure, and they also deliver a higher quality of service. *Action Item: Enterprises should discount vendor hype on integration and focus instead on the development and integration of core IT processes, most notably, problem management, change management, asset management and planning.*

Tactical Guideline: Well-documented services and costs in combination with customer-focused SLAs are the foundation for business-aligned internal services and are required for good sourcing decisions.

Defining Services and Costs

Typical SLAs
- Not specific to applications
- Operational
- Inadequate reporting
- Disassociated from cost of service

Effective SLAs
- Stated in business terms
- Application specific
- Customer-specific metrics
- Proactive monitoring and notification
- Linked to cost of service

- Document current operations services
- Create SLAs with business units
- Get business-unit validation of service definitions
- Develop unit costs
- Chargeback/cost reporting

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Once the IT operations group has developed a stable interface to the business areas, one of the first things IT operations must do is engage the business areas in a conversation about services and costs. The first step IT operations groups must take is to document the services that they provide as ongoing to the business units. In many cases, there are countless "assumed" services provided by internal operations groups that are not explicitly defined to business areas. There needs to be validation that current services are in fact required, and are of sufficient quality. A meeting of the minds between the IT operations group and the lines of business regarding services and service quality will reduce the cost pressures on IT and reduce the pressure to outsource. Without agreement on services and service quality, the IT operations group will find its budget cut such that it is unable to retain staff and maintain the current environment, in addition to improving service or completing new projects.

The initial discussion between IT and the business should be followed with a more detailed discussion of service commitments. Service requirements need to be expressed in terms that are meaningful to the business. SLAs provide the targets that IT operations groups need to hit, and they become the goals for any NSM automation effort. IT operations groups also must develop a reasonable "unit cost" for the infrastructure and services they provide, so that IT infrastructure decisions can be made with reliable financial information .

Strategic Imperative: Establish "business liaisons" in the IS organization that forge strong links with business units and then collaborate with operations managers such that the business unit requirements become the drivers for IT services with SLAs.

IT Operations Organizational Design

CIO, VP or Director of MIS

- Relationship Management
- Planning and Project Mgmt.
- Delivery Management

Lines of Business

Application Development

- Production Support and Operations
- End-User Services and Support

■ Negotiate services and costs
■ Report service levels and get feedback
■ Project liaison
■ Project ROI
■ Cost management

■ Service creation and provisioning
■ IT infrastructure projects
■ Capacity planning
■ Process and standards

■ Service assurance
■ Administration
■ Configuration/change management
■ Problem management
■ Performance and availability metrics

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IT operations must be organized to support the alignment and integration of the IT infrastructure with new and existing business processes, as well as provide the stability needed in changing times. Traditionally, IS organizations have not been well aligned with the business and thus have evolved with a focus of maximizing efficiency in technology silos. To move away from the status quo and to deliver both stability and the ability to change, IT operations must develop an organizational structure to support three major activities: relationship management, project management, and operational support. Relationship management is customer oriented, and focuses on service definition and cost management. Project management is focused on infrastructure project work to support business areas, application development initiatives, service provisioning and the development of the infrastructure standards and operational processes needed for a structured environment. Operational support is focused on running the environment; service assurance; and the implementation of change, configuration and problem management. The success of relationship managers is based on client satisfaction. There is an underlying assumption that the relationship manager is aware of the resources necessary to address user issues with IT, including the service desk, IT operations support staff, application development environment and external vendor liaisons and support. If the IS organization has no credibility, then the relationship management role will also lack credibility. As trust rises, relationship managers' involvement in the affairs of the business will increase.

Key Issue: Which vendors, products and technologies enable business-aligned enterprise management?

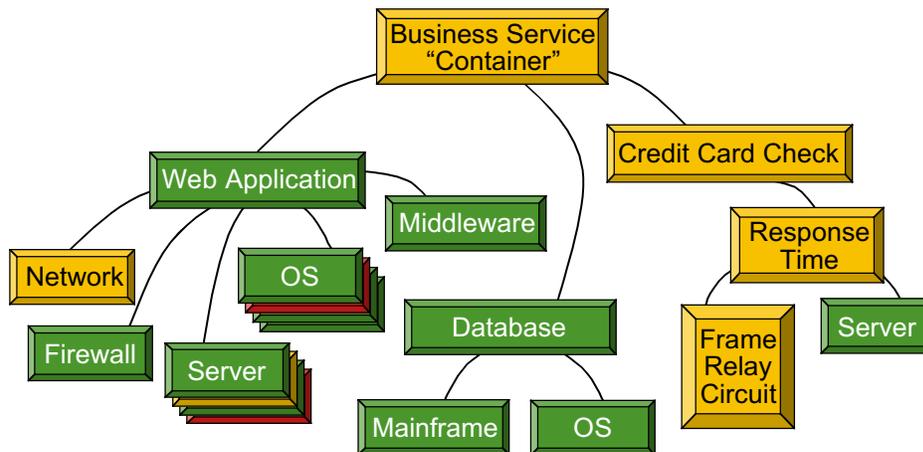# NSM Technology — Innovation or Stagnation?
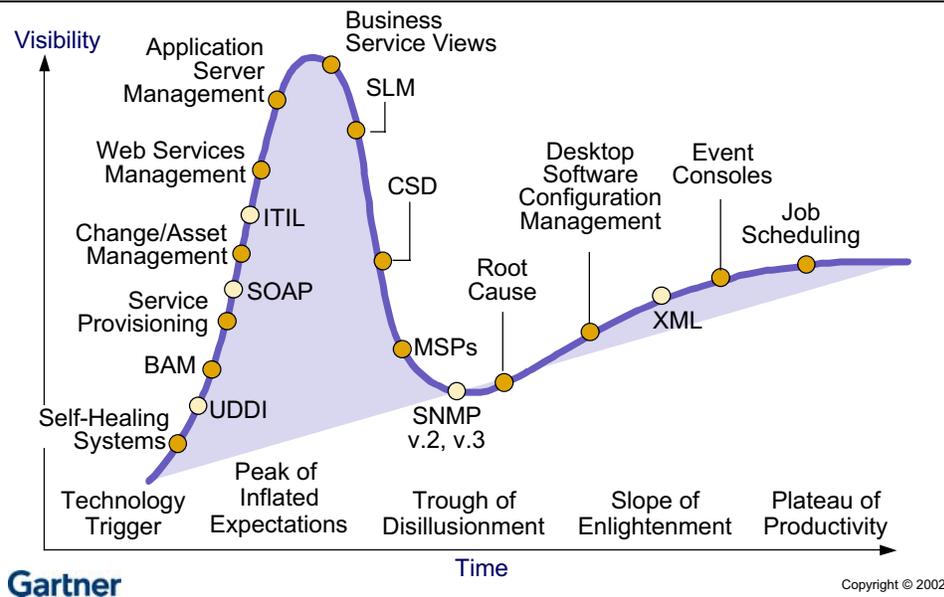
Our NSM Hype Cycle has shifted from a year ago; several new technologies have appeared in the cycle, while others have been removed. The stable technologies (i.e., event consoles and job schedulers) remain on the Slope of Enlightenment and Plateau of Productivity, with no other NSM technology achieving stability. In the past year, we have seen new technologies pass the Peak of Inflated Expectations, including consolidated service desk (CSD) and management service providers (MSPs). We still can't find reference sites that have merged problem, change and asset management into a single CSD tool or repository, and the MSP market has shrunk considerably. Service-level management (SLM) has come down slightly from the peak of the Hype Cycle. Although SLM is critical and important, vendor claims generally outstrip actual deliverables. On the rise are technologies related to change management including service provisioning and self-healing systems, also called autonomic systems (e.g., IBM's "eLiza"). There's increasing interest in business activity monitoring (BAM), although the role of NSM in BAM remains uncertain. From a technology perspective, the key is "openness." Available standards such as SOAP and XML increasingly are finding their way into NSM products, potentially enabling better integration in the future. Alternately, new development initiatives for SNMP v.2 and v.3 are virtually non-existent — they will be replaced by more open technologies.

Action Item: Enterprises should recognize that NSM solutions go through the Hype Cycle, and they should manage expectations against where a technology is in the cycle.

Strategic Planning Assumption: Through 2006, 60 percent of early efforts to highlight the business impact of IT infrastructure problems will fall into disuse due to the overhead placed on IT operations staff to manually define and update the logical connections between IT infrastructure components and business services (0.7 probability).

Business Service Views and Business Impact Analysis

Business Service "Container"

Web Application

Middleware

Credit Card Check

Network

OS

Response Time

Firewall

Server

Database

Frame Relay Circuit

Server

Mainframe

OS

Examples of Vendors: Aprisma, BMC, CA, HP, IT Masters, Managed Objects, Micromuse, Opticom, Proxima, Smarts, Systar, Tivoli

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From the "top-down" perspective, starting with in-depth discussions between the IS organization and business units, it is possible to define the high-priority business services and then construct a mapping of those services to their IT supply chain of underlying network, system and application infrastructure components. Solutions that document this mapping and analyze the business impact of IT problems are just starting to become practical, and, as is so common in the early days of something new, there are a lot of claims and confusion. The goals are simple. Enterprises need tools that can correlate IT components with business services, and then relate infrastructure problems to the potential business impact. Knowing this helps to prioritize support efforts when lots of things are broken. Some enterprises have already built this process manually, using tools built in-house and business interviews to determine the service topology. Although defining the linkages is a manual, time-intensive process today, progress is being made to automate some of it. Maintenance of the linkages in a rapidly changing environment is still a big part of the challenge to having success with these tools. Enterprises that have success with these tools are those that already have a good NSM architecture in place, and have good dialog between business and IS organizations. *Action Item: Use emerging "business service view" tools as a catalyst for discussion between the IS organization and business units to define business processes and priorities. This strategic effort must have top-down management commitment and must involve the entire IS organization.*

Strategic Planning Assumptions: By 2006, 80 percent of major NSM applications will use message bus services for internal interprocess communications (0.7 probability). Only 20 percent of those will use the message bus services to extend communications and data integration to other vendors' NSM applications (0.8 probability).

Message Bus: New Hope for NSM Data Sharing and Integration?

IBM Tivoli — WebSphere

HP – BEA,

WebMethods

and Tibco

BMC – Talarian

But where's the industry-standard "transfer pass" to get from one bus to the next?

Micromuse — Talarian

CA — Jasmine

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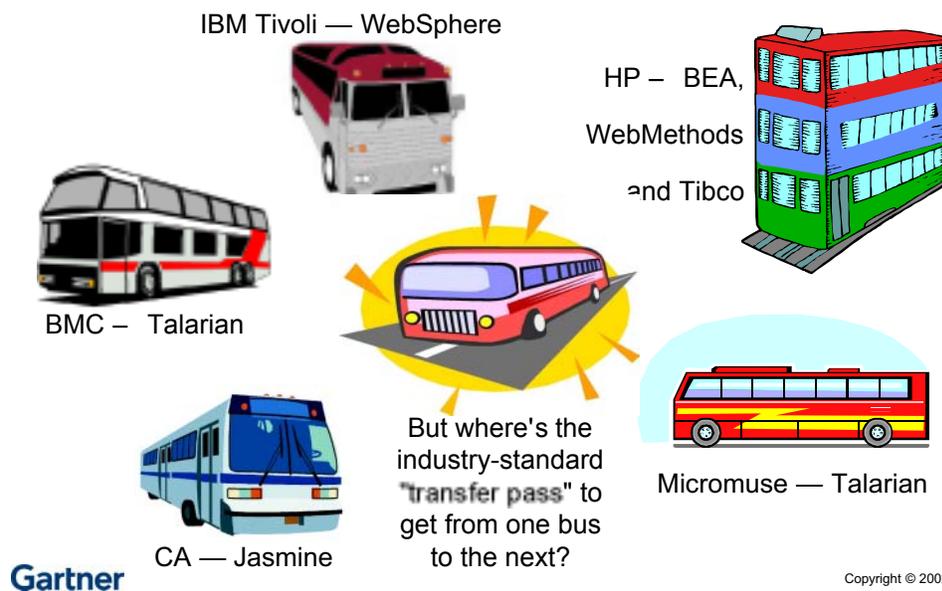
Leading NSM vendors are announcing next-generation product architectures that integrate "publish and subscribe" message bus technology. Popular with telcos and widely used for e-business application integration, a message bus can be thought of as robust and reliable message-oriented middleware to enable interprocess communication. The message bus allows management products to scale to larger networks, track more events and analyze more data. The bus also supports flexibility in interprocess communications and, in the future, may be the foundation for open, extensible multivendor management data integration. Currently, NSM vendors are aligning with different message bus vendors, as no standard exists to communicate from one bus to the next. HP has announced partnerships with three message bus providers: BEA, Tibco and WebMethods. CA has its own Jasmine message bus. Micromuse uses the Talarian message bus in the new version of Netcool Omnibus. BMC is also using the Talarian message bus in its Patrol version 7. IBM Tivoli will take advantage of the IBM WebSphere message bus. To achieve open communications between buses that are heavily based on XML, the emerging UDDI and SOAP standards will be essential, as will vendor cooperation. Due to the different message buses selected by NSM vendors, integration will more likely take place through loosely coupled Web services. *Action Item: Ask your NSM vendors about their message bus and Web services plans and pressure them to extend communications and data integration to other vendors' NSM applications.*

Strategic Imperative: Enterprises should plan for a consolidating Web Services management market. Consolidation will be driven by the major NSM vendors.

Web Services Management Vendor Spectrum
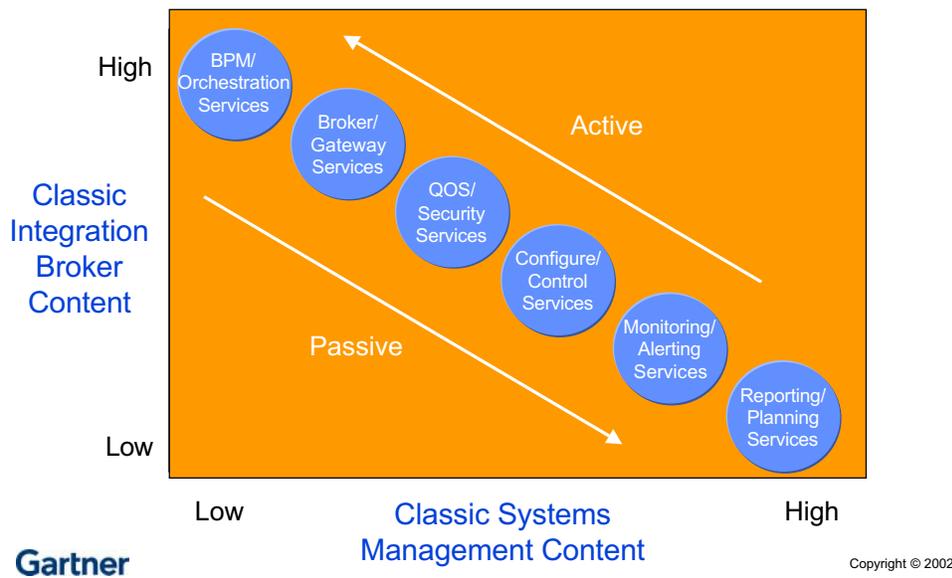
The Web services management market is composed of vendors coming from two basic directions — those providing Web services environments or "networks" that as a byproduct also provide management tools and functionality, for example Actional, Infravio and Talking Blocks. In addition to brokering and gateway functionality, you also see vendors in this category providing load balancing and monitoring technology as well. They often provide a means to forward SNMP traps to consoles provided by the major NSM vendors.

The other category of vendors in this space is the classic NSM organization, including Computer Associates, BMC Software, HP, IBM Tivoli. These companies will continue to move "up the stack" to provide an integrated management point of view. In addition, there will be niche NSM vendors focusing their management tools solely on this space.
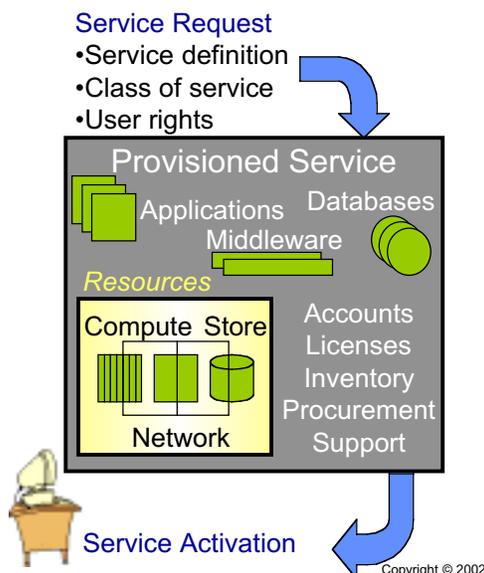
Action Item: When the market more fully matures, enterprises should expect consolidation to occur as the larger NSM vendors acquire some of the more successful, narrowly focused firms. In addition, many of the "pure play" Web services network providers will adjust their strategies to focus more fully on the management angle.

Strategic Planning Assumption: By 2007, service provisioning will expand from tactical solutions such as user account management and desktop software deployment to integrated solutions covering multiple IT service offerings.

Strategic Imperative: Use service provisioning, service definitions and specified classes of service to enable a structured environment, improve availability and reduce operations costs.

Service Provisioning

- Requirements
  - Specified classes of service
  - "Flow-through" interfaces
  - Process workflow tool
- Benefits
  - Consistent, accurate, faster service deployment
  - Assist enterprise RTE efforts
  - Portfolio of services
- Best Practices
  - Attack big value wins first
  - Automate where possible
  - Measure gains and reform

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Service Request
•Service definition
•Class of service
•User rights

Provisioned Service

Applications   Databases
Middleware

Resources

Compute Store

Network

Accounts
Licenses
Inventory
Procurement
Support

Service Activation

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Provisioning is a structured process approach that makes it easier to deploy services. The term has been used within the network service provider industry for years, and now is gaining relevance within enterprises. In addition to networks, the provisioning process can be applied to desktops, systems and complex applications. The process starts with a specification of the service to be offered. This may have a parts list, configuration settings, third-party license agreements and ties to inventory and support systems. The goal in a service provisioning process is to automate as much as possible. This is best accomplished when components have both incoming and outgoing or "flow-through" configuration interfaces. Self-provisioning should be supported. For example, users should be able to provision according to their roles. Or, a desktop system may be provisioned using the network card interface. Provisioning a service usually involves a number of complex steps, thus a workflow tool is important to keep track of progress and coordinate dependencies. Using a service provisioning process has benefits to the enterprise. The IS organization ends up with a portfolio of services that can be managed and deployed consistently, accurately and more rapidly than ad hoc deployments. In addition, the provisioning process aids in real-time-enterprise (RTE) goals, which depend on agility in deploying IT services. *Action Item: Enterprises should apply provisioning methods where there is the biggest payback, such as desktops, network equipment and customer-facing applications. Effort should focus on automating manual processes to shorten provisioning time, and gains should be documented to help justify future efforts.*

Strategic Planning Assumption: Through 2005, the top four NSM vendors will not be the innovation or execution leaders (0.7 probability).

NSM Industry Report Card

Report Card		
	Credits	Semester 1
Lots and Lots of Data	1	A
Useful Information	3	C
Ease of implementation	4	D
Technical Views	2	C+
Business Service Views	3	Incomplete
Integration	3	Incomplete
Final Grade:		

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The NSM industry has enjoyed four or five years' worth of end-user effort and investment in the pursuit of automation to improve management. How well has the industry delivered ? Unfortunately, the report card is not one to be proud of. We have lots and lots of agents that can produce a deluge of data, metrics and alerts, while many users are overwhelmed with data and still lacking the information needed to manage IT infrastructure according to business requirements. NSM products are still very difficult to deploy in a way that provides operationally useful function, because there is not enough knowledge built into the tools. With a lot of customization, many users can now achieve reasonably useful technical views from the tools, but the goal of business service views remains elusive for most IS organizations.

Strategic Planning Assumptions: Through 2006, BMC will continue to focus its efforts in core competency areas, rather than try to become a full-suite provider (0.8 probability). Through 2006, CA will continue to offer the industry's broadest NSM suite (0.8 probability). Through 2006, HP OpenView will be the preferred supplier of NSM tools to the telecommunications industry (0.7 probability). By 2005, IBM/Tivoli will offer best-of-breed functionality for the IBM software stack (0.7 probability). By 2006, Microsoft will become one of the "Big Four" (0.8 probability).

The 'Big Four' Scorecard

|	bmcsoftware	Computer Associates	hp	Tivoli software
Strengths	• Application/ Database management • Focus • Financials • Support	• Mainframe management • One-stop shop • Technology • Direct sales	• Brand/network management • Installed base • Partners • Windows support	• Storage management • Global Services • IBM LOBs • Global 2000
Weaknesses	• Innovation • Portfolio breadth • Partnerships	• Reputation • Product line(s) • Complexity	• Direct sales • Product integration • Mainframe management	• Innovation • TME architecture • Complexity
Opportunities	• Active management • Business service views • Cross-platform	• Advanced technology • Business service views • Cross-platform	• Business service views • Telco market • Compaq clients	• Linux/Java • Business service views • IBM Research
Threats	• No platform ownership • Best of breed • Culture	• No platform ownership • Best of breed • Corporate focus	• Lack of sales investment • Best of breed • Strategic to HP?	• Regaining trust • Best of breed • Partner disincentives

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Each of the Big Four has various strengths. From a product perspective, BMC has the most advanced application and database management product line. CA is the only vendor that can offer so-called "one-stop" shopping with a range of products from monitoring tools to help desk systems. HP has tremendous strength in network management, and among the Big Four, it also has the most "pure" Windows offering (i.e., built using Windows-based technology). IBM Tivoli has an advanced storage management capability, and as the in-house team for IBM, offers potential in delivering the most-advanced products for IBM's Software organization. There also are weaknesses. BMC is viewed as a conservative firm that rarely is first to market. CA has struggled to overcome issues regarding its industry reputation. HP suffers from what appears to be a lack of visibility within its own company. Tivoli overpromised and underdelivered with its technical architecture, which, while having substantial capability, suffers from overcomplexity. Although not currently one of the Big Four, Microsoft may soon be. Microsoft's primary struggle is to decide where to place and how to price management functionality. It can add functionality to the base OS, to a product running on an OS (Exchange) or to a stand-alone management product, such as Microsoft Operations Manager (MOM). Microsoft must create a model that not only provides a road map with which to address this internal challenge, but one that also can be shared with customers and development partners so that the former understands what to expect and the latter knows what to produce.

Strategic Planning Assumption: Spending on NSM new software licenses will grow from $9.7 billion in 2001 to $17.6 billion in 2005 (0.7 probability).

Stagnation in the NSM Market:
Vendor Consolidation
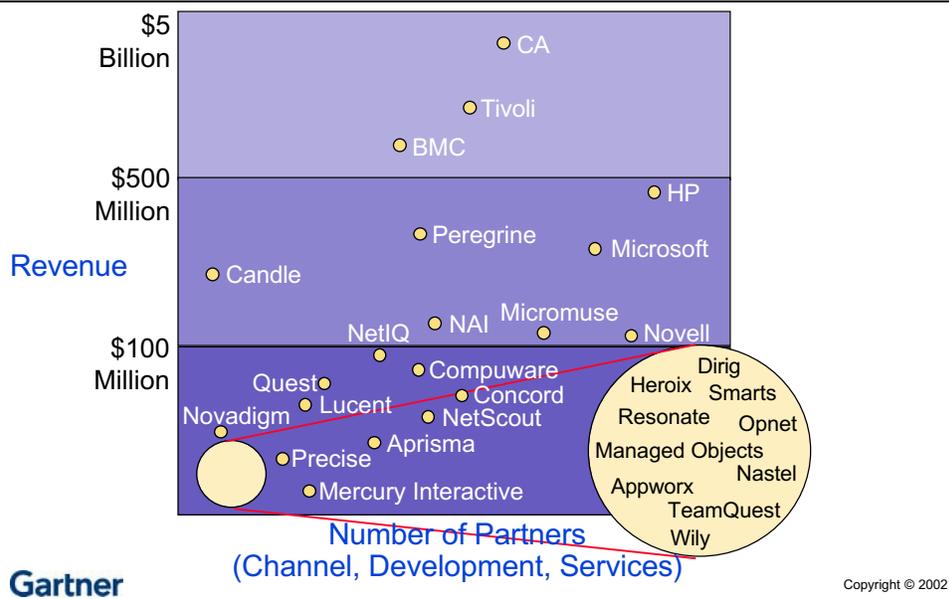
The NSM industry is roughly a $9.5 billion-a-year business, growing at a CAGR of almost 15 percent. The top four vendors in the market still command roughly half of the revenue. While these indicators would normally point to a healthy market, it is anything but vibrant — and in fact it is struggling. The leading vendors — BMC Software, Computer Associates (CA), Hewlett-Packard (HP) and IBM Tivoli are at best maintaining current revenue, and in several cases are seeing their market positions decline from the highs reached in the late 1990s. While some of this can be attributed to the current economic malaise, Gartner believes that the problem is much deeper and can be traced directly to the lack of a compelling vision, compounded by sub-par execution. Growth has not been sustainable primarily because execution in the NSM market has been dominated by acquisitions. As examples, CA (Legent, Platinum Technology and Sterling Software), BMC (PATROL Software, BGS Systems, Boole & Babbage, New Dimension), IBM (Tivoli, Unison, Software Artistry) and HP (Prolin, ManageX, Symantec's Networking Business Unit, Trinagy) have all had very aggressive M&A programs. Acquisitions have made it difficult for NSM vendors to simultaneously invest in new R&D while attending to integration, sales and support issues. The technical product integration efforts often diminish feature and functional R&D progress because the firm's energy is spent on engineering turf wars, architectural models and data structures rather than technical innovation. Thus, in many cases, the final product adds little if any direct value beyond such qualities as a common install or look and feel.

Recommendations

- Develop an architected approach to IT operations
- Reduce complexity through structured environment
- Develop IT management processes, then implement automation
- Define and measure services in business terms, and organize for customer intimacy
- Link IT infrastructure with business services
- Explore technologies that automate service provisioning
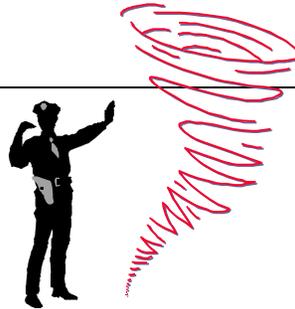
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The level of IT management process maturity will be the ultimate indicator of an IS organization's management effectiveness. Today's sophisticated infrastructures (not to mention increasingly restricted budgets) demand more than a technology-centric approach. Process development and optimization will provide the highest degree of return on investment and will enable the IS organization to become a more reliable and credible partner for the rest of the business. Developing an architected approach to IT operations while reducing complexity by focusing on a structured environment will help keep the whirlwind of change from buffeting you at every turn.

Vendor churn will match that of the environment itself, as new vendors rise to tackle the evolution of technology and older vendors struggle to improve their agility against more nimble competition. The economic downturn resulted in many layoffs within the NSM vendor community, and strong management will be a factor in determining which vendors survive the continuing slump. Enterprises are more careful about where they invest their NSM budget, and they increasingly are looking for broader solutions from fewer vendors; thus many of the less established companies are forced into a situation where only the strongest vendors will survive.