

Adapting IT Performance Management: A Business Imperative

As business leaders justifiably demand more value from their IT investments, IT organizations must make some far-reaching changes to their operations. A new approach to management tools can offer impressive results, but this evolutionary transition requires care. Management is evolving beyond simple infrastructure availability monitoring to provide more insight to the performance and business impact of broader IT services. Technology investments are only part of the solution, however. The true mandate is to change the culture of IT to focus more on business services and applications, rather than the raw infrastructure. Practical and proven advice is presented to provide guidance around the hazards of this transition.

Executive Summary

- Many IT organizations suffer poor credibility with business leaders because the business value of the IT investment is vague or unknown. Sloppiness and poor service are synonymous with these IT operations and they risk a grim future of punitive outsourcing. Companies that fail to achieve optimum return on their IT investments can only attain mediocrity in their own industries.
- Discipline is needed to improve operational efficiency and restore credibility. Discipline can be achieved via proven processes (e.g., IT Infrastructure Library - ITIL) as well as more rigorous attention to management technologies that automate execution of these processes.
- Disciplined operations and high business value are not impossible. Many enterprises have succeeded and have forever altered their industries by raising productivity, adapting to business changes, and lowering costs.
- Human nature and organizational culture are the most persistent impediments to high performance. A reward structure based on productivity gains, not heroics, is needed and the rewards must be supported by a strict, resolute mandate from senior management.
- Operational tools require an overhaul in their architecture and orientation. Tool consolidation under a common jurisdiction is recommended, along with modular architectures to enable flexible tool adjustments as requirements change.
- Performance management is weak in most enterprises. The common act of simple reporting is ineffective in increasingly complex IT environments. More automated analysis and action offered by new performance tools are needed.
- Application management is the new battleground in operational technology. As more attention is placed on service management, it becomes evident that applications form a good approximation of business services that can be monitored and controlled with relative simplicity. End-to-end perspectives of application performance are necessary and straightforward using readily available application monitoring technologies.
- Performance optimization is a balancing act between performance and cost. Realistic goals at a reasonable cost require careful planning and frequent communication among all parties, including business stakeholders, design and development groups, as well as

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operations. It is prudent to borrow proven engineering practices to perform this planning.

- IT will remain technology centric and gradually improve business awareness. Business requirements and business services are necessary, but presenting accurate business impact based upon technology monitors is unreasonable for now. Product developments through 2010 will improve this situation.
- Ambitious automation visions remain science fiction, but encouraging developments are now emerging. Any pursuit of advanced automation will fail however, without a disciplined operational foundation in place.

The IT Credibility Crisis

IT organizations (ITOs) face an unprecedented crisis with business leaders who have invested extensively in technology yet fail to recognize any quantifiable value from this investment. Despite impressive technology advancements, most ITOs remain synonymous with high costs, poor service, and ambiguous business value. The root of the problem is cultural.

As the technology industry evolved, it has produced a culture of sloppy practices and defensive postures against the incessant complaints of poor performance. This vicious cycle

must be reversed. While such endeavors are possible, they are not easy. In fact, a staggering number of ITOs will fail because they will not effectively confront the harsh realities of transition.

Research has proven the existence of this destructive culture in a surprising majority of enterprise ITOs. Among Global 2000 enterprises, 65 - 70% possess potentially terminal cultures. Only the top 30 - 35% will successfully demonstrate effective business value and prosper as intact entities by 2015. While 100% of ITOs will undergo some change to their structure and business models, the worst 30 - 35% will fail to demonstrate value by 2010 and will either fall victim to punitive outsourcing or they will witness the dissolution of their entire company.

Success, while difficult, is not impossible. Many of the most progressive companies are irreversibly altering themselves and their industries because they have mastered an ability to demonstrate business value through tight process control, automation technologies, and effective staffing models. They learned to not only maintain control over IT costs, but they leverage IT for competitive advantage. Retail (e.g., Wal-Mart, Amazon, eBay) and travel (e.g., Orbitz, Travelocity, Expedia) are perfect examples.

Fostering Discipline

These stellar examples have common attributes to illuminate the path to success for all others. Most notable among these attributes is discipline. All have implemented structured processes and enforce them. They then assemble their automation technologies around these processes and staff accordingly. This discipline is foreign to many ITOs, but it is an element proven to ensure future viability.

Discipline is a basic requirement of any successful enterprise. Discipline ensures low costs by minimizing wasted effort. It increases reliability by minimizing human error and it encourages continuous improvement. It is the single, most critical aspect to improving the credibility of the ITO. It is also quite straightforward if everyone follows the simple rules in place at successful companies.

Process

It is almost impossible to overstate the importance of good processes. Processes define the standardized methods to function as an organization. If all parties truly endorse (with action) common processes, improvement is almost guaranteed. If these processes are proven industry best practices, the guarantee is even stronger. A good place to start any process refinement is with IT Infrastructure Library (ITIL). ITIL has

finally garnered momentum and is proving its value for process improvement.

Developed by the British government, ITIL is beneficial for describing many of the processes useful for disciplined operations. It is not perfect, nor is it a final blueprint for everyone's operation, however it is a powerful tool to commence a transition to better discipline. Eventually, ITIL will morph into a new form, incorporating maturity models and continuous improvement principles. To remain current on ITIL and process-oriented service management, follow (or better yet, participate in) the IT Service Management Forum (itSMF) at www.itsmf.com.

Automation

Agricultural and industrial production demonstrated the vast benefits of automation and IT is no different. To achieve optimum efficiency and business value, automation of processes is essential. Management tools have always provided some degree of automation, but tools are now emerging to better automate data analysis and other skilled functions. The best ITOs are aggressively pursuing this new automation.

When it is based on a sound architectural foundation, automation technology helps enforce process execution, thus enhancing discipline. The sequence of applying automation

tools to established processes is critical. Although tools and processes reinforce each other for continual improvement, processes must be the first step. It is disastrous to start with tools and then attempt to force processes to fit the tools.

The Human Element

Above all else, a change in organizational and personal behaviors is necessary. Operations based on technology silos have become common, resulting in contentious inter-silo relationships that fuel further decline in discipline. Shifting to process as the governing organizational force enhances discipline by clustering common operational functions across silos (e.g., incident management is the same for networks, servers, etc.). Everyone must embrace this new culture and executive support (i.e., funding, resolve, and a strict mandate) is essential for its success.

Traditional Management Tool and Process Limitations

Management tools are now pervasive in almost all ITOs. Most are being used improperly or ineffectively because they align with the silo-oriented operations or the tools receive inadequate attention. Tools tend to be clustered in isolated domains rendering impossible any potential for business service insight and improvement.

Historically, management tools have been deployed to address the immediate pain felt by the organization. For years, this pain was related to infrastructure availability, so tools proliferated to monitor availability. The industry has largely succeeded in addressing availability, so tools must now change to solve new pain.

The current pain is performance. Many tools have attempted to provide insight to performance issues, yet problems persist. The reason is that most performance tools merely collect and report metrics relevant to a narrowly focused infrastructure device. Automated analysis and a broader perspective of services are only recently emerging, and ITOs must adopt new approaches to performance. One new approach highlights service performance over infrastructure performance. An effective approach to service management is to manage the applications.

Concentrate on the Applications

By revolving management primarily around applications, a more accurate perspective of the ITO's ability to deliver business services can be attained. Applications are usually not perfectly aligned with services, although they do represent a good proxy for services. Better still,

applications can be monitored directly with readily available tools. Managing applications is a close approximation for managing services. Applications are tools for end users attempting to perform their duties with maximum efficiency. Applications are the tactile interface for these business users whereas the infrastructure is a hidden mystery, as it should be.

An application orientation does not imply that we ignore infrastructure management. To do so would be a disaster. The correct balance of infrastructure and application management is needed where applications are the primary service management component and infrastructure governs operational details behind the scenes. Infrastructure remains as critical to the operation as is the superstructure to any building. The notable point is that we should trigger actions based mainly on application performance, availability, and other requirements.

Achieving End-to-end Application Management

Application management has several dimensions. The most common is the notion of response-time monitoring. Certainly, response time is relatively simple to measure and it is extremely valuable to understanding services. A few common methods exist to measure response time (usually identified as either active or passive

monitoring), all with their own pros and cons. The ideal system utilizes a hybrid of these methods.

Any application management task needs to view the application in an "end-to-end" fashion. There are several interpretations of what constitutes an "end" in this view, as composite n-tier applications may have multiple "ends." The important point is that the application's behavior is the result of myriad underlying factors but only one perspective truly matters: that of the end user. This end-to-end performance, as experienced by the end user, is the metric typically measured by response-time products.

It is becoming necessary to evolve service management to the next level beyond the prerequisite response time monitoring. To accomplish this, one must map relationships between the various applications and their underlying components. Relationships offer the "roadmap" to navigate the application's internal structure, to truly understand why applications behave as they do. Identifying the "ends" and all points between them helps accelerate incident and problem resolution and performance engineering. Configuration management and more advanced management processes and tool architectures streamline our ability to map relationships and leverage these

relationships to the benefit of every operational process.

Achieving this level of enlightenment requires new tools, but more importantly, it requires new attitudes about management. If this has a familiar ring to it, it is because this is another superb example of process refinement. The tools, while often ingenious, are subservient to the processes. Given the operational mindset and tool portfolio in most ITOs, graduating to this higher state will not be easy. It is also not impossible, as many have already successfully demonstrated.

Performance Optimization Requires Planning

The bottom line on performance is a need to optimize service performance. Optimization is a state of balance. It is not an extreme minimum or maximum condition. A tradeoff between raw performance and costs must be understood by all parties to produce the best business value. Sound engineering principles are used to optimize performance, but should be applied to services (i.e., applications).

Any engineering practice involves disciplined planning, a delicate balance of art and science. ITOs should plan for performance objectives by involving the various stakeholders in design and

development activities. It is a process of give-and-take negotiations where business "requirements" are moderated by feedback on the costs of realizing these objectives. The iterative nature of the planning negotiations gravitates requirements toward the appropriate balance of performance and cost.

Modeling: A Tool for Service Design

Modeling is a process that is sometimes used in planning. This is a fabulous and highly accurate means to optimize performance, but many find it daunting. Modeling is gradually improving, and the complexity of our environments will increasingly mandate model-based management to understand and control service behavior. Thus, modeling should be embraced immediately at some level. This is another area where configuration management will assist greatly, as it can provide the data (including relationships) needed to construct the models.

Simple Monitoring Is Not Management

As any true management exercise should be a closed-loop process with action involved, optimization is not simply monitoring and reacting to conditions. It implies preemption of conditions. Similarly, since the proper focus is on services instead of the core technology details below these services, any optimization must target the services themselves. Many tools exist for infrastructure optimization.

These are worthwhile, but only in the context of their ability to impact service optimization. A flawless, speedy network does not, in itself, optimize services. Service optimization requires the same end-to-end perspective as any other management function.

The Role of End-to-end Performance in Optimization

In fact, end-to-end application performance is one of the primary ingredients in any performance optimization venture. This metric is a basic service-level objective and thus the target (i.e., the delicate balance point) for optimization. The capacity planning process and the better modeling tools use this metric as their goal. When an appropriate end-to-end target is unknown, a modeling exercise will converge upon a target that balances user productivity with costs. Monitoring tools are then used to help enforce compliance with this objective. Changes in application structure and code and tweaks to infrastructure are performed only to optimize the end-to-end performance of the application. Tuning a component without regard to its impact on the service (i.e., end-to-end application) is a wasteful and potentially destructive act.

Business Service Management

A term that has recently gained traction in IT management is business service management (BSM). Many

people have their own interpretations of what BSM actually is, but all agree that processes and business-level services are at the center. Some have attempted to construct business-service models within the context of BSM and then use these models for event and performance data aggregation. Such capabilities would be wonderful, however any plans to accomplish broad business views of management data are quixotic. With current business technology, it remains too difficult to map business processes and measure their performance in an automated way. Manual methods exist, but model maintenance demands are high.

Since all of our rhetoric now seems to revolve around business services and models, what realistic options exist for BSM? First, recognize that BSM is a far-reaching, ambitious vision for IT operations that extends well beyond tools and processes. As such, there are several BSM "components" that can be implemented with relative ease. The first drives process structure, the second focuses on the applications, and the third establishes a formal business relationship management (BRM) function.

BRM is the "sales and marketing" division of the ITO. It is responsible for customer interfacing, service

level agreements, service catalogs, and all other customer-facing IT functions. Establishing good communications with customers is an amazingly simple yet profound step toward improved services, clear business value and an enhanced reputation among business leaders.

Tool Portfolio Management

Another major effort within BSM evolution is the consolidation and reassessment of the management tools necessary to streamline operations. For best results, most tools should be consolidated under a single organizational entity that is central to Operations. It may not reside under the jurisdiction of any technology silo.

Next, a modular tool architecture should be developed to allow tools to plug in to serve similar functions for different domains. A good example is event management, where specialized tools detect events and then forward them to other tools that process and correlate these events. The manager of managers (MoM) is a common term for this higher-level tool. The architecture should allow the domain-specific tools to integrate with the MoM in a way that allows interchangeable domain tools without radical changes to the MoM or other tools. Performance tools for both infrastructure and applications can also fit into such a modular

architecture, thus unifying availability and performance management.

A thorough review of tools should be executed to assess the fitness of existing tools within the architecture and identify missing tools that will need to be purchased. Simply put, you want to discard tools with no useful purpose or those that overlap other tools significantly, you want to retain tools that do fit the architectural model, and you want to acquire the missing pieces.

Tool portfolio management can be contentious, especially in larger environments where overlapping tools exist, each with its own fans. Nevertheless, simplifying tool complexity is mandatory and all efforts must be taken to minimize overlap.

The Future of Operational Automation

Finally, all tools ultimately form the foundation for more advanced automation. Automation has been a hallmark of IT since its inception. The industry is making some bold steps toward more comprehensive automation of IT functions. In fact, many staff functions now held in high regard for their technical requirements will become obsolete. Yes, we are repeating the same scenario played out in agricultural and industrial production over the

past two hundred years. We are replacing people with technology. It is unavoidable as we seek ever-improving business productivity.

The grand visions of automation heralded by some vendors and industry pundits are years away from reality, however exciting developments are moving into production. In the performance realm, automation is already offering better anomaly detection through mathematical data analysis. We also have the early stages of infrastructure change automation to adapt to changing performance demands. As compelling as these developments are, they still have relatively mundane technology at their core.

Performance monitoring and optimization models are commonplace now. If properly integrated into modular architectures centered on process automation, these simple elements enable sophisticated automation for the future. Without this solid foundation in place, more ambitious automation will fail. Those who do follow structured engineering principles for their management tools and processes will enjoy success. They will not only be cost effective, they will also contribute to revenue improvement by facilitating more agile business execution.

About the author:

Glenn O'Donnell is an independent IT research analyst with a 25-year background driving change in an evolving technology market. A world-renowned expert in IT Operations, management technologies, IT/Business alignment and infrastructure, he has developed and operated complex, global IT systems and infrastructures and has helped hundreds of other companies address a wide variety of technology, process, and business challenges. His experience includes 21 years in IT architecture, development, and operations and over four years as a leading operations analyst at META Group. A frequent speaker and author, Glenn can be reached via email at glenn@k3pp.com and he hosts an IT Operations blog at k3pp.blogspot.com.

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