



Five Ways That Service Optimization Improves Mainframe Staff Productivity

MAY 2009

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TABLE OF CONTENTS

- EXECUTIVE SUMMARY 1

- THE CHALLENGE OF IMPROVING PRODUCTIVITY 2
 - » Staff Productivity 2
 - » Systems Management 3
 - » Database Management 3
 - » Capacity Management 4
 - » Operations Management 4
 - » Storage Management 5

- THREE “E’S” OF SUCCESSFUL SERVICE OPTIMIZATION 5

- KEY CRITERIA FOR A SERVICE OPTIMIZATION SOLUTION 6

- TOWARD CONTINUOUS PROCESS IMPROVEMENT 6

EXECUTIVE SUMMARY

An online shopping network saved more than 200 labor hours a day, seven days a week, of mostly developer and senior-level system administrator time — saving \$1.8 million in the first year alone on an investment of around \$1 million. A major telecommunications company improved staff productivity and could then handle increased capacity and service-level requirements — saving more than \$5 million in full-time equivalent (FTE) costs over three years. Both companies realized these productivity improvements by implementing service optimization.

Like these companies, many mainframe organizations are being asked to handle greater workloads, bigger databases, more applications, more system resources, and new IT initiatives with current (or even reduced) staff. Meanwhile, these organizations face continued “mainframe brain drain” as the most experienced technicians retire, taking with them their skills and detailed knowledge of mainframes’ idiosyncrasies.

To achieve the maximum productivity and business value from their companies’ mainframes, IT operations departments need to vastly improve staff productivity. That is, they need to get more output from their current staff. Given that many budgets are tight or even frozen, any investments in improving staff productivity must provide a quick payback, or cost little, or both.

With *service optimization*, you take a disciplined approach to improving IT performance without increasing your costs. You identify underperforming management processes within the data center, and then you systematically make these processes more effective using a combination of best practices and intelligent automation.

When applied to staff productivity, service optimization can help you do the following:

- » Handle growing mainframe environments without adding staff or skills
- » Move from reactive firefighting to proactive management — reducing waste and wear-and-tear on staff that cuts into productivity
- » Reduce human error that can jeopardize service level agreements (SLAs) or prolong outages
- » Reduce the level of expertise required to manage day-to-day, repetitive operations
- » Free up skilled technicians from routine tasks so they can work on creating new services or improvements that help the business (not just the mainframe)
- » Increase job satisfaction and empower technicians to innovate

Although the mainframe is a mature and well-run platform, there are still many ways to extract more productivity from the mainframe by improving staff productivity. No matter how sophisticated or how automated your mainframe IT management processes are, there are almost always places where even small improvements can deliver big productivity returns. This white paper describes five ways that service optimization can help you boost mainframe staff productivity, while at the same time maintaining or decreasing current costs.

THE CHALLENGE OF IMPROVING PRODUCTIVITY

Getting the maximum productivity from mainframe operations staff has always been important, but it's vitally important in today's challenging economy. In a recent survey of more than 1,500 CIOs, Gartner Executive Programs (Gartner EXP) found that IT spending budgets would be essentially flat for 2009. Gartner EXP further noted that "CIOs must be decisive and resourceful in 2009," demonstrating leadership through imperatives that include being "resourceful in restructuring IT to raise its productivity and agility, because the business will not reduce its demand for IT just because CIOs have fewer resources."

Improving mainframe staff productivity is often easier said than done. Mainframe management skills are specialized resources: they aren't easy to learn, and they aren't easily transferable. As a result, it's difficult to redeploy technicians to areas that could improve mainframe productivity. New IT initiatives often require not only people, but also new skills. However, training budgets are nonexistent or frozen, and mainframe skills and knowledge continue to walk out the door as the most seasoned technicians retire. Mainframe IT organizations need to look for creative ways to improve staff productivity — ideally, ways that deliver significant productivity gains without requiring a significant financial investment.

STAFF PRODUCTIVITY

Service optimization enables you to improve efficiencies and increase staff productivity — without an accompanying increase in costs. Through a disciplined approach, you carefully examine existing management processes in your data center and identify those that are not performing up to expectations. Then, using a combination of best practices and intelligent automation,² you make those processes more effective.

Service optimization can help you increase the productivity of your IT staff by doing the following:

- » Using software instead of people to handle routine, labor-intensive tasks
- » Replacing complex, multistep routines with highly automated, repeatable workflows
- » Shortening or even eliminating "think time" — the time it takes for technicians to decide what to do in response to a problem or error condition
- » Reducing the chance of human error and the need for rework
- » Providing information that makes "war-room" troubleshooting discussions more productive — or even unnecessary
- » Capturing the "tribal knowledge" of your mainframes as software routines so you don't lose the knowledge when people leave

Service optimization can help you identify and automate processes that require a disproportionate amount of labor and skills, such as those processes associated with monitoring as well as data collection and correlation.

Monitoring: One example of a monitoring task is any process that requires a technician to watch a "green screen" and respond to error messages. This task usually can be automated easily by using intelligent software to watch for errors, respond to preset thresholds, correct most errors automatically, and escalate only exceptional problems.

By automating this process, you can reduce the effort spent on an essentially nonproductive task. You reduce the chance of human error and can scale the process more easily as the installation grows. The technician is freed to work on higher-value activities — from fine-tuning management processes to creating new services for the business.

Data Collection and Correlation: Another example is any process that requires a technician to collect and correlate performance data from multiple tools so the organization can meet SLAs. For effective diagnosis of a problem, the tools must minimally span the entire mainframe environment, but more typically they span the entire enterprise. Today's monitoring products are capable of producing more information than any human can effectively perform. However, this process also can be effectively automated using sophisticated, intelligent software. Automating this process reduces human error, rework, and response times that can result in missed SLA targets. Technicians can spend their time and brainpower performing analyses and making smarter decisions, instead of wrestling with manual data collection and correlation.

The Spirit of Service Optimization: Getting Creative at Working Smarter

There's an old saying in IT: The best engineer is a lazy engineer. Lazy engineers look for ways to get the computer to do the work; they figure out how to write tools and utilities that automate repetitive tasks. Back in the pre-network days, I worked with an engineer at an oil company who had held a data entry job that involved manually entering plant data from process control computers across the entire facility into a spreadsheet for analysis. He wrote a program that automatically uploaded the data into the spreadsheet over a modem, compressing his all-day job down to 10 minutes. After enjoying his newfound free time for a while, he told his manager what he had done — including teaching himself how to program. This is the spirit of service optimization: Looking for ingenious ways to eliminate tedious work — and understanding that even small ideas from unexpected sources can lead to a big impact. (By the way, the data entry person was promoted to software engineer.)

Service optimization can improve staff productivity across your mainframe IT operations, as you will read in the following sections. Here are five ways.

SYSTEMS MANAGEMENT

Service optimization can dramatically streamline systems management. It can reduce the skills and staffing required to monitor and maintain IT systems, enabling you to handle today's complex and growing environments without a proportional increase in staff.

Today's IT systems are complex collections of objects (components and software) that work in concert to run business-critical applications and workloads. Meeting SLAs requires substantial knowledge and labor to monitor and maintain the health of objects. It also requires vigilance to prevent service disruptions when components are updated or added, because the updating or adding process frequently introduces errors. By using intelligent software to automate systems monitoring and tuning, you can equip technicians to handle more MIPS, make fewer errors, and provide higher service to the business.

Example: A large telecommunications company faced the challenge of adding thousands of new customers (and related capacity) while simultaneously improving IT service levels, but it had no budget for additional staff. The company optimized its systems monitoring processes to automatically detect performance and availability problems, and to implement corrective actions — all without human intervention. Through improved staff productivity, the company could handle the increased capacity and service-level requirements — in the process saving more than \$5 million in full-time equivalent (FTE) costs over three years.

DATABASE MANAGEMENT

Service optimization can improve the productivity of the database administrators (DBAs) responsible for managing the large, highly transactional and mission-critical data stores that run on mainframes. Mainframe database management typically requires highly skilled DBAs for tuning, performance, recovery, data movement/replication, and other day-to-day management tasks. Improving DBA productivity can help mainframe organizations accommodate the massive increases in data volumes as well as the increasing requirements to have data online and available all the time for the business. The concept of database maintenance "windows" is becoming obsolete, and dealing with shrinking or nonexistent maintenance windows consumes significant DBA attention and skills.

Mainframe organizations can increase the volume of data an individual DBA can manage by intelligently automating how a DBA monitors, tunes, and manages data movement in the database. You can further improve DBA productivity by taking advantage of technologies that enable database maintenance to take place while databases remain online, eliminating the time and errors involved in chasing ever-shrinking database maintenance windows. DBAs can provide higher service levels, calibrated to business needs. This type of intelligent automation enables mainframe IT organizations to support growing data environments while controlling headcount.

Example: Another leading telecommunications company significantly improved DBA productivity by building intelligent alarm and alert monitors and then integrating them with the company's data management and capacity planning tools. The optimized process automatically tunes applications and adjusts database parameters in response to changing workloads. The company has reduced the number of DBAs as data and transaction volumes have grown. The DBAs not only can handle more data volume,

but they also can respond much more quickly to changing conditions and problems. Working with an outside systems consultant, the company built expert knowledge into the monitoring system, enabling the DBA team to maintain high levels of capacity, performance, and availability with much less effort.

CAPACITY MANAGEMENT

Capacity planning — keeping the right amount of resources available — is a complex task that requires an intimate understanding of the environment, statistical analysis skills, and the ability to forecast future behavior. Good capacity-planning analysts are usually highly knowledgeable, expensive technicians who have many years of experience. They must perform an exacting, high-stakes balancing act: over-provisioning can waste millions of dollars in capital and operating expense, while under-provisioning can hurt application performance and availability.

Service optimization can get more out of expensive capacity-planning talent by automating the collection, correlation, and presentation of data. You might combine very sophisticated monitoring with models that show consumption of capacity by various applications and workloads. With the most labor-intensive, time-consuming part of their jobs automated, skilled analysts can focus on interpreting data, making predictions, and ensuring that the environment will support planned growth. You can manage bigger, more complex and ever-more volatile environments with fewer analysts — and with better accuracy.

Example: A large county in the United States is saving taxpayer dollars and reducing costs by increasing the accuracy of resource planning. The county's Information Technology Center uses intelligent performance-management software and best practices to automate day-to-day management, enabling staff to accurately evaluate the daily performance of the county's business-critical criminal justice application and other key applications. Performance information also feeds into strategic capacity planning, allowing the staff to accurately predict future infrastructure requirements. As a result, the county now makes infrastructure upgrades at precisely the right time. The county has also gained more staffing flexibility: Because of the intelligence and simplicity of the software, capacity planning no longer depends on skilled capacity planners who have deep infrastructure knowledge. Other IT professionals can be easily trained.

OPERATIONS MANAGEMENT

Service optimization can help automate the execution and management of batch jobs across complex environments, a critical but labor-intensive task. Batch jobs do the heavy lifting for many business-critical applications, processing large streams of information as part of complex information flows. Any modern data center running mainframes executes hundreds or even thousands of batch jobs daily. The jobs are often linked to each other and depend on a number of steps happening in the proper sequence; one missed step can jeopardize the entire job. Experts estimate that more than 50 percent of all critical data processing is performed in batch, making good management vital to the business.

IT operations staff must define and execute these job streams and ensure that everything runs on time, in the proper sequence, and without errors. If errors occur, the staff must recover and restart the system in the most appropriate place. Today, batch jobs can span the entire environment: A job running on a UNIX server may depend on a mainframe job and vice versa. These dependencies create enormous complexity, which is amplified by the number of batch jobs.

Optimizing job scheduling processes is one of the more high-leverage investments you can make. Service optimization can reduce the complexity of production management and job scheduling, reduce errors, save considerable amounts of staff effort, and prevent costs to the business caused by application downtime.

Example: A leading online shopping network was losing the battle with job scheduling: Processing \$3 billion in revenue and 35 million transactions annually was pushing its mainframe operations staff to the limit. The IT organization ran multiple scheduling applications on various servers that required many manual processes (such as scripting, which necessitated manual review of logs to confirm completion of daily processing), and this solution was falling apart in the face of massive growth. As with most manual processes, human error occurred occasionally. These errors caused anything from minor irritations to data corruption (from a misfiring stream) that required the IT staff to halt key systems while data was restored to a prior point and then reprocessed.

By introducing a centralized, intelligently automated process for job scheduling, the company gained control of the environment. The new process provides a unified view of scheduling with automated notifications, insight into events, and policy-based management that reduces errors. Most problems are corrected without human intervention, and it now takes only seconds, not hours, to determine where problems are happening.

The company was able to reduce staffing from four operators and one supervisor per shift (performing only mainframe operations) to two analysts and one supervisor performing other tasks while still fully controlling and monitoring all batch processing. New analysts can be trained more quickly. The company saved a minimum of 200 staff-hours a day, seven days a week, of mostly developer and senior-level system administrator time. As a result, the company achieved savings of \$1.8 million in the first year alone on an investment of around \$1 million.

STORAGE MANAGEMENT

Service optimization can improve the productivity of storage administrators, which is critical because most storage environments are growing exponentially. Storage administrators have seen their individual spans of control increase from a single terabyte just a few years ago to hundreds of terabytes today. More storage means more space-related ABENDs (unintended program terminations), reallocation problems, and other difficulties. In addition, the more storage volumes in use, the greater the chance of problems such as fragmentation, unused space, and other allocation errors — all of which require administrator intervention.

You can improve the productivity of storage administrators by using sophisticated utilities and comprehensive diagnostic reporting with best practices automation. This solution can automate much of the lower-level work, such as manually monitoring space allocation, and enable administrators to be more proactive, preventing many ABENDs. Easier diagnosis can significantly reduce the number of problems that require administrator intervention and can speed the resolution of escalated problems.

Example: A global manufacturer was struggling to meet service requirements. The IT department experienced frequent space-related ABENDs. The department was in the middle of a tremendous growth cycle with online storage (direct access storage devices, or DASDs), but could not keep up with the planned growth of business requirements because the staff performed most tasks reactively and manually (despite using a mix of point solutions and home-grown tools). IT personnel turnover multiplied all these problems.

The company optimized storage management using intelligent software, automating tasks such as space reporting and reallocations. Immediately, space ABENDs related to mainframe programs written in JCL (job control language) ceased to occur, resulting in greater productivity for the storage administrators and the production control area. Weekly reports tracked the recovery activity and identified any serious abuses of JCL and extremely inefficient allocations, improving allocation practices. The staff could also view performance data across shared LPARs to pinpoint the exact causes of slow I/O and DASD bottlenecks. Multilevel automation enabled a response before a situation became critical, and fixes rarely required manual work. The company now can also forecast long-term growth and cut costs on DASD purchases.

THREE “E’S” OF SUCCESSFUL SERVICE OPTIMIZATION

The key to successful adoption of a service optimization program is to proceed in deliberate stages. This paper presented examples of how service optimization can produce significant productivity gains in five areas of IT operations. It’s important to consider a three-stage model for identifying and targeting improvements in any of these operational areas.

The first stage of a service optimization program is **Enablement**. In this stage, you consider the processes and workflows related to a discipline to ensure that at each step enabling technologies exist to automate and streamline manual and repetitive tasks. Any manual task is a candidate, with particular focus on tasks that increase as the size and scale of the environment increases. By implementing tools and enabling technologies, you lay the foundation to support increasing scale with improved productivity. You can also simultaneously reduce costs and business risk as well as improve availability and performance.

With an appropriate management infrastructure in place, the focus then turns to the second stage, **Exploitation**. With any solution, there are features and capabilities that can significantly improve productivity but are often overlooked. A common example in office productivity might be in how you use a spreadsheet. Many people might become frustrated when trying to use a spreadsheet to analyze data, until they discover the magic of pivot tables. By learning the value-add and productivity-enhancing features of a solution, you can reap tremendous rewards and maximize the return on investment for a particular management solution.

Finally, the **Empowerment** stage consists of the ongoing measurement and improvement of the workflows based on measurement and analysis of key metrics, with a focus on continuous improvement. In the empowerment stage, you successfully arm the administrative staff with technology to eliminate repetitive, error-prone manual processes. This enables the staff to focus on understanding how to leverage the value of the technology to the business itself, maximizing the value of the IT infrastructure.

KEY CRITERIA FOR A SERVICE OPTIMIZATION SOLUTION

When you select solutions to help implement a service optimization program, be sure to look for solutions that achieve the following:

- » **Simplify daily operations through automation**
Look for mainframe products that provide higher-level interfaces to utility functions, create job steps, and handle tricky syntax for you. This reduces errors, aids in the support of compliance initiatives, and frees you from repetitive, mundane tasks.
- » **Identify and fix problems quicker**
Select integrated products that are combined with a transactional view of the mainframe to help you find problems quicker. These same tools should also allow you to diagnose and fix the problem.
- » **Drive increased availability**
No one has the luxury of hours for maintenance outages anymore, or worse yet, outright failures. Look for solutions that emphasize online maintenance or no-outage utilities in addition to well-engineered, robust infrastructures and automation with proven track records.
- » **Optimize skills and hardware**
Search for simple 3270 and Web-based interfaces designed to meet the needs of both experienced and new users. Look for products that run on robust, well-engineered infrastructures that minimize the overhead of management and ensure the efficient use of system resources.
- » **Leverage enterprisewide Business Service Management (BSM)**
Successful BSM implementations span the whole of your enterprise. Find mainframe applications and supporting z/OS subsystems that can be directly tied to the BSM strategy, allowing you to prioritize actions according to business requirements. Look for solutions that include native support for the mainframe rather than clumsy bolt-on approaches implemented after the fact.

TOWARD CONTINUOUS PROCESS IMPROVEMENT

Although the mainframe is a mature and well-run platform, there are still many ways to extract more productivity from the platform by improving staff productivity. No matter how sophisticated or how automated your mainframe IT management processes are, there are almost always places where even small improvements can deliver big productivity returns.

Service optimization combines best practices gleaned over years of supporting demanding customer environments while leveraging automated tools and processes to get the most value possible from people. Mainframe IT organizations that have successfully implemented service optimization have found that optimized processes carry them to ever-higher levels of productivity. Once you begin to see the benefits, you will start to “think optimization” and be intuitively on the lookout for new places to apply it to improve staff productivity.

For more information, visit www.bmc.com/service-optimization.html.

END NOTES

1. News release, “Gartner EXP Worldwide Survey of More than 1,500 CIOs Shows IT Spending to be Flat in 2009,” January 14, 2009.
2. Intelligent automation is automation that has native intelligence of the environment and uses technologies such as advanced monitors, sophisticated alerts, advisor technology, predictive analysis, and automated responses.

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