

Managing Business Service Performance in Complex Distributed Environments

An ENTERPRISE MANAGEMENT ASSOCIATES® (EMA™) White Paper
Prepared for ASG Software Solutions

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Executive Summary

Businesses increasingly rely on IT to support internal operations and to deliver products and services to their customers. However, instead of the traditional IT focus on technology, leading IT organizations now concentrate on delivering value through IT services. End users directly interact with these services, whether simple e-mail services or complex financial applications, rather than the underlying technologies that support those services.

With the intention of lowering costs and speeding delivery of IT services, IT organizations continually seek and adopt newer technology, including service oriented architectures (SOAs) and virtualization. However, the complexity of new technologies can also create IT management challenges including performance and availability problems, service downtime, security exposures, productivity losses, and drastically rising operational costs.

In order to provide high quality, cost effective business services in complex, distributed environments, improved IT management strategies are required. Business service management (BSM) is a strategic approach to managing IT services in support of improved business performance. Building performance management solutions around BSM helps IT maintain agility and deliver high levels of business service performance.

Sound performance management solutions address the detection, prevention and resolution of issues broadly across end-to-end services and deeply within technologies including operating systems, applications, databases, middleware, and servers. Additional capabilities may include end-user experience monitoring, service level management (SLM), trend analysis, integration with existing tools and repositories, single interface, pre-packaged reports, and dynamic, real-time dashboards.

Increased reliance on IT has been accompanied by greater technical complexity and difficulties in managing applications and the IT infrastructure.

Proper tool selection can have a positive impact on IT productivity and effectiveness as well as business performance. For IT organizations that require a performance management solution, Enterprise Management Associates (EMA) recommends investing in one that is designed and built around BSM. ASG's BSM performance management solutions accomplish this through a powerful, flexible, extensible and well architected foundation called Business Service Platform™ (BSPTM).

Introduction

Organizations of all types and sizes are continuing to increase their reliance on IT. Whether business entity, government agency or non-profit, most organizations gain value through IT. In some cases they rely only on the basics. This may include e-mail systems for sharing information and public Web sites for communicating the value of the organization's products or services. In other cases, nearly every aspect of business operations depends on IT. Beyond the obvious examples of e-businesses such as eBay and Amazon, a multitude of businesses utilize IT for accounting, financial management, business planning, ecommerce, advertising, marketing, R&D, supply chain management, coordination of manufacturing processes, maintaining personnel records, and countless others.

Increased reliance on IT has been accompanied by greater technical complexity and difficulties in managing applications and the IT infrastructure. IT teams must provide network connectivity, data repositories, multi-tier applications, remote access, and Web sites all while ensuring security and compliance. At the same time, underlying infrastructures are constantly changing, driven by growth, dynamic business priorities, new technology investments, and sometimes disruptive activities such as mergers and acquisitions. Over time, applications and IT infrastructures grow to include inconsistent architectures.

IT organizations have traditionally approached the challenges of complexity, change, and even cost reduction through division of labor and increased specialization. This approach is needed to some degree in any large IT environment simply to support the depth of knowledge required to manage each of the major technology domains including networks, servers, storage, applications, and databases. Of course different IT organizations may select variants of these primary categories as well as a multitude of sub-categories. In any case, most IT groups organize their operations teams around technologies.

New approaches for IT management have evolved beyond a technology focus. Rather than receiving benefit directly from technology components, users gain value from services. Examples of IT services include e-mail, Internet access, e-commerce, Web hosting, IT management, and application delivery. These services are of course based on a number of integrated technology components and processes. However, IT users view them as a single entity that meets one or more of their needs. By adopting IT management processes and tools developed around the concept of IT services, IT organizations can optimize the interdependent variables of cost, quality, and agility across end-to-end services rather than individual technology domains.

IT management practices built around the management of services are generally referred to as IT Service Management (ITSM). The most popular best-practice ITSM framework is the IT Infrastructure Library™ (ITIL™). Specifically, ITIL is a set of books, each covering an aspect of IT management, published by the United Kingdom's Office of Government Commerce (OGC). ITIL promotes the model of IT as a provider of IT services and gives detailed descriptions of important IT processes related to the management of IT services.

*BSM is an approach to managing
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performance of the business.*

Beyond high quality, low cost IT services, business performance also relies on measures pertaining to revenue, orders, shipments, inventory turns, gross margin, customer satisfaction, and many others. BSM is an approach to managing IT services driven by the distinctive goal of improving the performance of the business. BSM provides a mapping between business objectives and the services that support those objectives. By providing an understanding of service impact on business objectives, BSM enables business managers to make informed decisions to optimize the business.

Managing Business Service Performance

For businesses to remain competitive, the business-supporting IT services, also known as business services, must have high levels of availability and performance. However, if IT is not careful, it can inadvertently initiate a vicious cycle where its efforts to service quality actually hurt IT agility and business performance.

The vicious cycle is based on the following relationships. Business performance depends on business services which in turn depend on applications and the IT infrastructure. With the continual emergence of increasingly complex technology, including SOA, J2EE, .Net and virtualization, current distributed application environments have grown more complex than ever to manage. Without proper management tools and processes in place, IT agility is actually decreased by the technologies meant to deliver improved business services. Along with this comes reduced business service quality, which in turn can impact overall business performance.

The challenges from escalating complexity are real. Based on EMA research, 24% of IT organizations report that one of the biggest barriers to cross-domain application support is lack of effective diagnostic tools. SOA environments, whether based on J2EE or .Net, have been found particularly difficult to manage due, in part, to their ability to support dynamically composed applications. To support current distributed application environments, management tools must understand and interact with SOA technologies.

Additional EMA research has found the adoption of server virtualization is growing at 20% annually, and up to 95% of IT organizations are deploying some form of virtualization. While virtualization inherently abstracts and hides the complexity of sharing physical resources, it actually adds visible new management challenges. Through virtualization, multiple application tiers may reside on a single physical server, complicating the measurement and management of resource utilization. Performance management and other tools must understand the relationships and impacts between virtual and physical components.

Using newer technology to deliver improved business services can be good. In fact, with proper management tools, those same technologies may indeed improve IT agility. SOA can speed application development and decrease integration costs. Virtualization can speed service deployments and enable rapid adjustments to dynamically changing business demands. The key, however, is to recognize the need for effective management. Managing business service performance requires particular attention in complex, distributed environments.

Many IT organizations rely on antiquated, reactive methods that involve waiting for incidents to occur as a means for identifying performance issues.

Performance Management in a Complex Distributed Service Environment

Many IT organizations rely on antiquated, reactive methods that involve waiting for incidents to occur as a means for identifying performance issues. IT administrators often spend the bulk of their time fighting fires rather than proactively monitoring for leading problem indicators. When problems do occur, they are often detected by users rather than by IT. Compounding the challenges, root cause analysis for identified problems is often not completed. This creates a break/fix cycle where failures occur repeatedly. Patches are applied or workarounds are produced, but the problems are never truly resolved.

To reduce downtime and improve problem resolution times, IT support staff must have the tools and processes in place that promote *proactive* rather than reactive problem prevention. Various approaches to problem management, including performance issues, can be taken. However, an effective problem management process should include at least these steps:

Detection

Automated performance monitoring solutions are required to provide complete data on the status of each critical IT component as well as for each business service. This requires tools or, more likely, an integrated suite of tools, with the capability of monitoring the performance of each specialized technology component as well as pulling that data together for end-to-end views of business service performance. Yet continual monitoring from both service and infrastructure perspectives is not enough.

Prevention

The keyword for prevention is *proactive*. Trend analysis is used to help predict performance issues before they become business inhibitors. By correlating historical event and performance data, the leading indicators of performance degradations can be identified and corrective actions taken. Prevention should also take place before services are deployed in the production environment. Services must be designed to provide appropriate levels of performance – including availability, capacity, and scalability – to meet business needs across geographic locations and during periods of peak demand. Pre-deployment test processes should then validate each of these performance attributes.

Resolution

EMA research has determined that, on average, problem resolution lasts between 1 to 4 hours. A significant part of this time, between 30 minutes and 2 hours, is dedicated to identifying the cause. Care must be taken to ensure the root cause is diagnosed and resolved. The resolution of performance problems must also consider various demand scenarios. Fixes must find a balance between provisioning excessive resources and cost effectively meeting peak service demand. As the root causes of issues are identified and remediated, the number of failures is reduced, freeing up critical personnel to focus on increasing IT productivity and meeting new business objectives.

Choosing a Performance Management Solution

Choosing a performance management solution requires careful consideration and understanding of the attributes of leading offerings. The right performance management solution will increase IT productivity and help IT deliver high quality services. On the other hand, choosing an inappropriate solution can lead to user dissatisfaction and negative business impact. EMA research shows that 37% of IT professionals lack the tools they need to support their IT environments. So it is not surprising that 43% of application outages are still reported by users.

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It is insufficient to simply deploy an independent point product for each technology domain. That approach will lack the critical perspective of end-to-end business service performance. Even for organizations that have yet to adopt BSM or other ITSM methodologies, a holistic view of IT infrastructure performance provides tremendous value. Complete performance management solutions offer depth to address the unique attributes of each technology domain including servers, applications, storage, network, and database as well as supporting technologies such as J2EE application servers, .Net frameworks, transaction processors,

and messaging middleware. Yet they also offer breadth to understand the relationships within business services and across application and infrastructure components. After gaining perspective with the broad view, IT teams can use specialized tools to drill down for lower level problem diagnosis and troubleshooting.

Many IT organizations have already invested in one or more point products for performance management. Point products tend to focus on a single technology domain such as network or systems. Some performance management solutions recognize and embrace this by supporting integration with individual point products. These solutions can utilize data from existing tools and add value to it by placing it in the context of business services. Having the option to extend the life of an existing IT investment can reduce the cost and effort required to move to a complete performance management solution that works within a BSM framework. However, it is also important to recognize when the useful life of an existing investment has ended and replace it with something more aligned with the current management strategy and architecture.

Gaining a broad perspective on business service performance requires a single, consolidated view. This allows operations staff to concentrate on a single interface, and to more quickly identify problems and reduce total resolution time. If a network or system operations staff had to monitor and manage through a broad set of disparate packages, they would consume a great deal of time simply switching between the interfaces. This “swivel chair” model is also impractical for correlating data from different tools to identify problems. It is also why leading performance management solutions are not simply a consolidated interface used to view the independent data from different tools.

What gives the single interface potency is an underlying model which understands and represents the relationships between each of the application and infrastructure components comprising the business service. This model is often derived from automated discovery and application dependency mapping processes. The relationships of the components of each business service may be stored in a repository called a configuration management database (CMDB). The performance data from the specialized performance monitoring tools can be stored in a performance management database (PMDB).

By using a business service model and access to supporting data, performance can be monitored, measured, visualized, and managed both broadly and deeply. Yet there are more capabilities to consider.

- Real-time monitoring across an enterprise requires heterogeneous, multi-vendor support for UNIX, Linux and Windows as well as virtualized systems. For example, EMA research has found that 98% of enterprises implementing virtualization do so using multiple platforms, multiple technologies, and multiple vendors.
- A solution for the enterprise also requires interoperability with existing management systems. IT organizations that have invested in tools such as Microsoft Operations Manager (MOM) often wish to keep them in place when upgrading or expanding their management capabilities.

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- Another solution component to be aware of, often not available from performance management vendors, is end-user experience monitoring. It is often critical to go beyond business service health to understand the performance levels actual end users are experiencing.
- A strong performance management solution will also support proactive measures to prevent business service performance degradation and outages. Trend analysis, automatic alerts to key personnel, and guided problem resolution for root cause analysis all help prevent performance issues.
- It is always important not to overlook the basics of well designed software products. For performance management solutions this means low overhead monitoring and data collection that doesn't degrade service performance. It also means dashboards that provide service, application and infrastructure status at a glance and comprehensive reporting with pre-packaged reports for ongoing communications to other constituents.

Achieving Results with Performance Management

Tool selection can have a dramatic impact on the productivity and effectiveness of IT teams. Leading performance management offerings not only address detection, prevention and resolution, they automate routine, repetitive activities. This enables IT staff to focus on higher value activities that require their insight and skills. Increased staff productivity and higher levels of asset utilization can both lead to cost reduction.

Ultimately, it is the business that is best served by a performance management solution.

Improved business service quality brings positive visibility – and funding – to IT. For IT organizations to realize these benefits, their efforts need to have a tangible and visible impact on business success. Performance reporting in the context of business services quantifies return on investment (ROI) from IT assets. Detailed, customized reports for business executives should be generated to provide business performance indicators and an understanding of the impact of business services.

Ultimately, it is the business that is best served by a performance management solution. IT failures and downtime are greatly diminished while performance is optimized in a way that enhances, rather than burdens, business operations. When the IT infrastructure is under control, products and services can be provided more effectively, overhead costs are reduced, and customers are happier. High quality business services enable dynamic responses to changing business conditions and ultimately improved business performance.

ASG and Performance Management

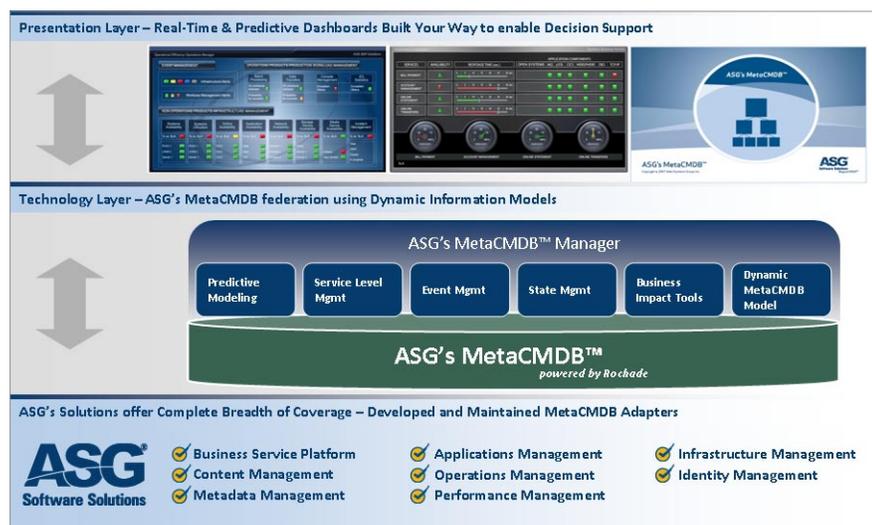
ASG has a portfolio of IT management software solutions and products designed and built around BSM. At the core of this portfolio is ASG's Business Service Platform™ (BSP™). ASG's Business Service Platform™ (BSP) for Performance Management provides organizations with the tools they need to tie distributed applications, and their health, to corporate objectives.

ASG's BSP for Performance Management can help improve business service availability and reach high-end performance while reducing the risk/cost of outages and down-time. It accelerates troubleshooting, correlates events that impact business applications, and provides real-time reporting. The solution monitors and reports on exceptions threatening service level agreements (SLAs) to ensure rapid response for failing, faltering or sluggish systems and applications. ASG's BSP performance management solutions enable organizations to integrate and correlate virtually any data, Web browser based tools and information into a single dashboard, delivering enterprise-wide value.

ASG's BSP for Performance Management can help improve business service availability and reach high-end performance while reducing the risk/cost of outages and down-time.

While specific metrics can change with each business service, the value framework of timeliness, quality, and relevance remains constant and must be optimized. With ASG's BSP Performance Management solutions, organizations can easily develop performance management strategies to support unique business models, delivering flexibility and agility. Based on leading ASG performance management technology, ASG's BSP Performance Management Solutions' robust features ensure the high performance, availability, scalability, and integrity of business applications. The solution integrates seamlessly with the ASG suite, enabling IT teams to isolate and resolve problems, often before they impact business.

ASG's differentiating meta-configuration management database, ASG MetaCMDB™, is the core of ASG's BSP. It serves as a repository of MetaObjects describing IT infrastructure, business applications and their relationships, which together define services. The MetaCMDB is built on the ASG-Rochade Metadata repository and can act as either master or "citizen" CMDB in a federated system of CMDBs and trusted data sources. Through federation, the transfer and storage of multiple copies of data is avoided and current data can be accessed dynamically. ASG's MetaCMDB and dashboards are tools that help clients manage technology that powers business.



ASG's BSP for Performance Management uses an internal PMDB to store performance and availability data to enable rich analytics and proactive modeling. Monitoring results are reported through the BSP dashboard and tailored to each user's perspective. For integration with existing performance monitoring tools, ASG Universal adapters enable data translation and mapping between disparate data models and formats.

The MetaCMDB and presentation layers are core components of a BSM solution. By discovering, mapping, and maintaining the relationships between the components that form business services, the MetaCMDB can correlate performance, availability and events to the service and map them to business performance indicators. This enables a real-time picture of overall business health. It also provides root cause and impact analysis of performance and other problems. The presentation layer, with customizable configuration views and queries, offers real-time and predictive dashboards for decision support. Rather than waiting for infrastructure or application issues to impact the business, problems can be predicted and prevented.

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ASG's BSP Distributed Performance Management provides granular, real-time measurement of over 350 different performance metrics, enabling detailed performance and capacity monitoring and management of distributed servers, databases, and applications, covering both physical and virtual infrastructures. ASG's BSP Distributed Performance Management operates with ASG's Business Service Management solutions to support the multiple vectors of heterogeneity that EMA recommends, including:

- Multiple virtualization technologies – such as server and application virtualization
- Multiple virtualization platforms – including Windows, Unix (AIX, HP-UX, Sun Solaris), and Linux
- Multiple virtualization vendors – including Microsoft, VMware, IBM, and Citrix

The broad performance metrics are correlated through a central source of application dependency and system information with the MetaCMDB, enabling enterprises to achieve business performance goals, even in highly dynamic virtual environments. This contributes to successful audits, improved compliance, better performance, and higher availability. IT can also improve SLA response, improve their own productivity, and reduce their operational costs.

For J2EE initiatives, ASG's BSP Distributed Performance Management provides performance information on server resources including CPU, memory, swap, file, and process activity. It also monitors the overall J2EE environment and applications through a variety of Java APIs. By breaking down a deployed J2EE application into its component parts and examining component interrelationships, it helps to select application components that require in-depth monitoring and configure the instrumentation used to measure their performance. This analysis can be used to troubleshoot current issues and proactively set up performance monitoring and management strategies to anticipate and resolve future

problems. ASG's BSP Distributed Performance Management also provides instrumentation of selected application components (e.g., Servlets, JSP, EJB, and user classes) to focus method-level instrumentation on the critical path components within the application without incurring significant performance degradation for the entire application.

ASG provides key capabilities for monitoring business service performance in a complex, heterogeneous, physical and virtual environment with SOA-based applications to help enterprises achieve their business service management objectives. ASG's BSP for Performance Management solutions become a true platform from which organizations can comprehensively monitor, report on, and manage the health of business services. ASG's BSP fuses the goals of IT and business.

EMA Perspective

ASG has been early to recognize and deliver on the value of approaching IT management from the business perspective. This has required going beyond technology focused management to adding the capability to manage end-to-end services. And delivering services with the goal of improving business performance is what BSM is all about. In order to deliver BSM driven products and solutions, ASG built its portfolio around a BSM enabling foundation called BSP.

ASG's performance management solutions are built squarely around the BSM concept and leverage the capabilities of BSP for gathering, storing, sharing, analyzing and visualizing critical performance data. While ASG has specialized tools that cover the diverse

technologies found in an enterprise environment, it also integrates with existing performance management solutions. The BSP interface layer supports this with its ASG's universal adapters to enable rapid integration and usage of data from any source.

BSP supports service models by discovering service components, mapping their relationships, and storing them in its MetaCMDB. Based on ASG-Rochade™, MetaCMDB is a very flexible and robust CMDB system. By using a metadata model rather than the table driven approach found in relational databases, the complex, interdependent relationships found in IT services can be easily represented in the MetaCMDB. While ASG performance management solutions can be used to focus narrowly on technology components, or broadly on the entire infrastructure, it is the service model in the MetaCMDB that enables the end-to-end business service perspective.

ASG's performance management solutions meet the needs of all types of organizations whether they are enterprise IT departments, managed service providers, government agencies, or non-profits. These solutions include tools for IT organizations just getting started with performance management and that have not yet moved from technology to service management. As the needs of those companies grow and for the most demanding environments in other companies, ASG provides more extensive capabilities not found in many competing offerings. For instance, SLM enables IT organizations to track and manage to committed levels of performance, availability and capacity. And end-user experience monitoring takes performance management beyond the infrastructure to understand how end users perceive actual service performance.

ASG provides key capabilities for monitoring business service performance in a complex, heterogeneous, physical and virtual environment with SOA-based applications to help enterprises achieve their business service management objectives.

For IT organizations that require a performance management solution, EMA recommends investing in one that is designed and built around BSM. ASG's performance management solutions accomplish this through its powerful, flexible, extensible and well architected BSP.

About ASG

ASG provides software solutions to over 85 percent of the world's largest companies. Through its comprehensive BSM solution, Business Service Platform™, ASG is an established BSM provider with a strong heritage in Content, Metadata, Applications, Operations, Performance, Infrastructure, and Identity Management technologies. ASG enables clients to reduce costs, enhance customer service, meet business objectives, and truly go beyond BSM. Founded in 1986, ASG is a privately held company based in Naples, Florida, USA, with more than 90 offices around the world.

About Enterprise Management Associates, Inc.

Founded in 1996, Enterprise Management Associates (EMA) is a leading industry analyst and consulting firm dedicated to the IT management market. The firm provides IT vendors and enterprise IT professionals with objective insight into the real-world business value of long-established and emerging technologies, ranging from security, storage and IT Service Management (ITSM) to the Configuration Management Database (CMDB), virtualization and service-oriented architecture (SOA). Even with its rapid growth, EMA has never lost sight of the client, and continues to offer personalized support and convenient access to its analysts. For more information on the firm's extensive library of IT management research, free online IT Management Solutions Center and IT consulting offerings, visit www.enterprisemanagement.com.

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