

## I D C V E N D O R S P O T L I G H T

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# Optimizing Business Performance with Enterprisewide Application Management

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*Ever-growing demands are driving enterprise information technology (IT) organizations to increase the activities needed to ensure the performance and availability of business-critical applications for end users. Indeed, the health of the enterprise is, in large part, dependent on IT and the applications used throughout the organization. This is due in large part to fierce competitiveness of the global marketplace and the ever-increasing use of the Web as a vital business platform. In order to support the business in the face of these dramatic market forces, IT must be able to manage all of the critical components underlying today's multitier distributed applications, including servers, storage, networks, and databases. IT is looking to deploy automated approaches to managing software applications and the distributed system infrastructure on which they reside.*

*The need for automated software for applications management is being driven by the complexity of the heterogeneous business–information technology environment, the need for cost reduction, and the need to meet critical business service objectives. This paper examines the need for application performance and availability optimization to ensure a productive workflow, whether at the knowledge worker's desktop, in middleware, in Web infrastructure, or end-to-end across enterprisewide processes. The role of Oracle in this strategically important market is also examined.*

### The Business Need for Application Management

Application management has evolved from its tactical beginnings as a simple maintenance function into a strategic task. Applications today are assessed for their business-service quality and are prioritized according to the importance of their business mission. Managing applications involves understanding the entire software infrastructure, from end to end, and determining the level of service and support required for individual applications.

Applications are typically managed for key availability and performance objectives based on service-level measurements such as uptime percentage and end-to-end throughputs and response times. Typically, performance and availability have been measured in terms of these "generic" infrastructure-centric metrics, but, increasingly, the focus has shifted to include business metrics, such as the number of business tasks accomplished by an application user. Application service measurements may be simple performance and availability metrics, or they may be more sophisticated depending on business requirements and can include key performance indicators (KPIs) that represent business effectiveness of the application in meeting business process requirements. The level of functionality is an important distinction when thinking about application management as a top-down approach versus traditional infrastructure-centric systems management.

Senior enterprise management and IT management are faced with the following challenges in application management:

- Applications must operate reliably and at the highest levels of functionality within the enterprise, across its servers, and from Web platforms on a 24 x 7 basis — the business expectation is zero downtime.
- IT is the autonomic nervous system of the enterprise, committed to fulfilling the business mission and serving as its business partner. In order to do so, IT must assure that application management is strategically deployed across all of its distributed systems from a centralized management console.
- As the business-technology platform evolves toward a service oriented architecture (SOA), both management and IT must constantly revisit priorities and commitments, most of which are realized through the applications infrastructure.
- Ongoing support and maintenance costs for applications, whether legacy, custom built, or off the shelf, must be effectively managed so that total cost of ownership (TCO) remains viable.

The core application component in any enterprise is the relational database management system (RDBMS). The RDBMS is the information source on which application functionality is built and will be built in the future. Distributed applications such as CRM, wireless mobility, ERP, and others are delivered via servers that interact with the relational database server, as do Web servers. Performance monitoring and integrated, automated tools for detecting and identifying operational problems are key requirements for managing these applications.

Business and IT have made great progress over the past decade in learning how to work together toward mutually agreed-upon business objectives. Yet time has proven that this is, and will likely remain, a journey rather than a destination. Thus, it comes as no surprise that business and IT find common ground at the applications interface.

Applications management is an outgrowth of system management and network management. However, while the system and network are all but transparent to managers and knowledge workers, the applications are more manifest. Therefore, the responsibility for the following critical aspects of system, network, and application management falls to IT:

- Performance and availability management
- Configuration management
- Hardware and software inventory
- Policy management
- Identity management
- Fault management
- Accounting management
- Billing and statistics gathering
- Provisioning, software deployment, and package management
- Security management
- Software metering and event monitoring
- Troubleshooting, error logging, and data recovery

Additional differentiated points between systems management and application management include the following:

- Application management requires deep knowledge of application flows and processes as well as the ability to map them onto application infrastructure.
- Whereas traditional systems management has a component-management approach, application management requires an application and functional approach.
- Traditional system management frameworks collect information around the application infrastructure (e.g., network, host server, storage), but application management requires direct inspection and knowledge of application internals.
- Application failure creates user dissatisfaction and confusion for the IT staff as to the cause of the failure. This confusion can be a big contributor to further delays and downtime. Sometimes the confusion is caused by excessive data regarding a failure — such as an "event storm" around an incident — without clear information as to the root cause of the problem. Application management directly and clearly relates application performance to failed components and hence significantly reduces the element of confusion.

Applications, from an IT perspective, were once viewed as the lowest layer in the software stack. Today, it is clear that the system view must be with the applications at the top. Indeed, this change in perspective is integral to looking beyond the system maintenance view toward a service oriented architecture.

SOA works at the business value chain level to leverage information that addresses the organization's business objectives — boosting sales, improving customer satisfaction, enhancing product quality, and driving greater operational agility. SOA is made up of loosely coupled applications that may be infrastructure, middleware, Web based, or modular — it makes no difference — all of which complement the enterprise's business processes.

SOA implementation implies that IT and business objectives are in accord, and that knowledge workers are given top priority in fulfilling the business objectives. With SOA implemented, the enterprise, working in concert with IT, may be able to more quickly and decisively respond to changing business conditions.

### ***Increased Flexibility, Higher Reliability, Lower Costs***

Application management helps IT focus on the most important aspects of system integrity: the point where business processes and technology infrastructure converge. The focus on applications raises performance levels, resulting in higher systems reliability, which in turn means lower operating costs because there are fewer outages. Knowledge workers are more productive as well.

An effective approach to the deployment of application management is an integrated suite of management tools designed to work in concert with the following other utilities:

- **Application performance management:** Monitoring applications for possible problems, diagnosing root cause, and making necessary repairs, ideally without intervention
- **Life-cycle automation:** Reducing human labor, manual procedures, and workflow (e.g., provisioning, imaging, patch management) to drive down cost and increase productivity (Automation also leads to higher availability and improved performance through reduction of human error.)

- **Configuration management:** Discovering, collecting, analyzing, and reporting IT configuration information related to infrastructure and applications, which can be updated at will
- **Service-level management:** Prioritizing, often with line-of-business (LOB) managers, which applications have priority for performance, QoS, and usage monitoring, and then monitoring and delivering to the agreed-upon service levels

In the past, application management was often a piecemeal approach that included reinstalls, monitoring, individual reconfigurations, patches, and so forth. Today, application management can be viewed as a strategic approach to overseeing the integrity of a mission-critical asset — it's no longer a maintenance function but rather a flexible business asset that can be tuned and honed to higher standards and greater utility, which will result in lower total cost of ownership.

### ***Key Trends in Application Management***

Service oriented architecture is coming to many large-enterprise IT organizations. Its increasing implementation means a tighter integration of IT with business objectives but also a streamlining of system management with application management. SOA brings a new modular approach to application design, which promises faster, more flexible business applications and easier integration with legacy systems.

The SOA runtime environment is highly automated, resulting in quicker problem diagnoses and resolution. IDC believes that SOA will soon drive the enterprise agenda because it merges IT with business objectives, takes standardization to high levels, and promotes cooperation and discipline toward setting up common practices and processes that are managed at a higher level. This will, in turn, lead to enterprises developing an event-driven architecture, master data management, and high-granularity content management.

### **Considering Oracle**

Oracle, founded in 1977, has built a major software business by taking strategic advantage of relational database management (RDBMS) technology. Today, Oracle is the world's second-largest independent software company. Headquartered in Redwood Shores, California, the company employs more than 65,000 people worldwide.

Oracle's stated corporate vision is based on customers getting more value for their information dollar by helping them build an information-driven enterprise and by viewing information and IT as strategic assets. These goals are based on three principles:

- **Simplify:** Speed information delivery with integrated systems and a single database.
- **Standardize:** Reduce cost and maintenance cycles with open, easily available components.
- **Automate:** Improve operational efficiency with technology and best practices.

With these principles in mind, the company has designed its application-management solution, Oracle Enterprise Manager, with a top-down approach. Initially developed as a database management tool over a decade ago, Oracle Enterprise Manager has recently expanded its functionality to include the following:

- Management beyond that for the database, such as for Oracle Fusion Middleware, and Oracle Applications
- New management capabilities for grid environments with Oracle 10g and Oracle Grid Computing, which have added scalability and richer management features for storage and host servers

- Management of non-Oracle technologies, such as software plug-ins and connectors for non-Oracle databases, middleware, network devices, storage, and more

Oracle's acquisition strategy has provided a mandate for aggressively building enterprise application management for heterogeneous environments because many of the acquired products run on non-Oracle technologies. Oracle Enterprise Manager is also a key element of Oracle's Superior Ownership Experience strategy and is the foundation on which management for Oracle's Fusion Applications is being built.

The product's focus seems a natural direction, given that Oracle has made significant investments in infrastructure software and systems management. However, Oracle Enterprise Manager has taken a unique approach by focusing on the applications tier and integrated deep reporting, diagnostics, and remediation capabilities that encompass the end-user experience, application processes, and flows as well as related infrastructure supporting those end users and applications.

Oracle Enterprise Manager's top-down approach to application management helps the product differentiate itself from the traditional systems management vendors. Most traditional management frameworks provide rich, heterogeneous IT component management but lack adequate application-level support. The expertise Oracle has acquired in over a decade of research and development in enterprise application development and management — enriched by multiple acquisitions in recent past — gives the company an upper hand in addressing the needs in this area. This is also evident from Oracle Enterprise Manager's overall architecture, which aggregates management information out of box for an application-centric view of IT in the following areas — service level, application performance, configurations, and life cycles:

- **Service-level management** involves availability, uptime, transaction analysis, and more. This Oracle tool facilitates a more accurate, detailed analysis of each individual enterprise's service-management needs with the application services modeling tool, then monitors the applications for usage and performance.
- **Application performance** includes proactive monitoring of key performance, usage, and health indicators, all graphically visible in the dashboard tool, as well as recognition of errors or warnings. The transaction performance analysis tools help locate the problem or bottleneck, and event log analysis provides an interactive tracking report. It also includes automatic root-cause analysis and adaptive thresholds to improve accuracy.
- **Configuration management** includes inventorying and automatic discovery, saved in the Oracle Enterprise Manager integrated configuration management database (CMDB). The policy manager assures enterprisewide standard configurations and compliance.
- **Life-cycle management** involves managing different aspects of the application as it progresses from testing to stage, installation, production, and maintenance through decommissioning. Automation is a key requirement, moving labor-intensive tasks associated with each step to a self-actuating process that saves both time and money. At the simplest level, automation assures constant monitoring and just-in-time resource allocation.

Patches, when appropriate, are announced and made available to the administrator. The Oracle Enterprise Manager automation feature makes it possible to create a new, or cloned, application environment from a working model, with many uses such as adding new servers to applications that require additional resources.

Automation is also important for life-cycle management. Oracle Enterprise Manager provides automation for the entire spectrum of quality assurance (QA), from stage to deployment and operations. For example, Oracle Enterprise Manager can easily replicate a test environment for

Oracle E-Business Suite applications, run test jobs, fix problems, and then move applications into production.

Whereas most management vendors provide solutions for one or more of the above-mentioned areas, Oracle Enterprise Manager stands unique in providing application-centric solutions across these areas.

The solution is fundamentally directed at Oracle's own existing enterprise applications — Oracle E-Business Suite, PeopleSoft, and Siebel. However, over the last two years, the company has added monitoring and management for non-Oracle technologies through partner plug-ins and connectors. Additionally, Oracle manages a partner program to help partners develop and deliver plug-ins and connectors for Oracle Enterprise Manager. The company has recently announced a solution for managing SAP through a partner plug-in.

However, there are still challenges within this business model. Many newer and smaller enterprises are choosing nonintegrated, and often vertical market, applications over enterprisewide solutions. In addition to appealing to these enterprises, Oracle needs to be mindful that it's in a market known for stiff competition and lightning-fast market entries from newer, highly adaptive solutions.

Oracle's long-term history as a top-tier vendor in database and enterprisewide solutions is no guarantee of continued success. IDC will wait to see how Oracle's Fusion solution addresses this strategy and whether it reveals a broader, more encompassing strategy.

## **Conclusion: Getting from Here to There**

Systems management and application management have many common requirements, beginning with the need for centralization. IT organizations must possess the ability to quickly identify, address, and resolve problems in any application area from a single location. Ideally, no application should be unavailable, whether to an internal knowledge worker or to a customer or client browsing at the Web site.

Moreover, performance is an equally critical factor: information or transactions must be completed and delivered at acceptable response times, under varying conditions. In short, the functionality and reliability of an enterprise's applications determine its success in addressing its mission and fulfilling its value proposition.

The applications are the point of convergence where the business, using its sophisticated information technology, delivers to its customers. Therefore, having an application management plan, strategy, and solution in place makes sense for larger enterprises, especially those whose major applications are being managed manually or with piecemeal automation. Indeed, most application management solutions now offer automatic patch management, for example, which reduces costs and personnel resources at the most basic level.

Taking a top-down approach to application management makes sense to IDC, yet it is a fundamental reversal in IT procedures and will require some adaptation on the part of IT management and staff. The most practical way to approach this change is not as a systems change but rather as an alignment of IT processes with business processes, demonstrating how the integration of the two pragmatically shifts the IT focus to the nexus of the business objective. In short, it will make sense to IT people.

With its 30 years of experience, Oracle has the product knowledge and the understanding of its customers to help effect this change. IDC believes Oracle has the opportunity to be successful in this market, which is still evolving, insofar as the company propagates its vision of the information-driven enterprise with thoughtful, focused customer education.

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