



Application Management Tools for the Real Time Enterprise

An end-to-end approach to achieving rapid, affordable RTE capabilities

Executive Summary:

To meet today's pressing business demands, organizations must speed up their internal processes and improve the timeliness and availability of information throughout the enterprise. The industry is now using the term "Real Time Enterprise" (RTE) to describe the effects of an enterprise IT infrastructure that enables high-velocity information distribution, replication and access. While in the long term Web services, XML, EAI and advanced n-tier distributed applications hold promise, there are a number of powerful data replication and application management tools that allow enterprises to move quickly towards RTE while maintaining compatibility with long-term enterprise integration and extension frameworks. These tools also offer added benefits of causing far less business disruption and capital expense.

Adapting to a customer-driven economy

Too many businesses today are trying to compete in fast moving markets with internal processes that are based on traditional, inefficient production and reporting cycles. These traditional IT cycles are largely out of step with real-time market and customer events that profitability relies on. To compete in the customer-driven economy, companies need to continuously respond to the commercial environment they are part of. The key to responsiveness is a robust and resilient IT infrastructure that can rapidly move data wherever it is needed without great cost or disruption to critical business processes.

To support a "sense and respond" way of doing business, today's forward-thinking IT architects are now striving for an event-driven applications infrastructure that allows customers, suppliers and partners to interact in near real time via efficient extended business processes. A responsive, low-latency business is increasingly being described as the "Real Time Enterprise" (RTE). As companies move towards the goal of RTE, they are able to convey information fluidly wherever it is needed, transcending the traditional limitations of isolated legacy "silos" of information and slow batch-oriented reporting and analysis cycles.

Defining the Real Time Enterprise:

Each organization will have a slightly different idea of how the Real Time Enterprise will be achieved. Given the broad scope of this concept, Gartner Group got together a number of its consultants to create this general purpose definition: *"The Real Time Enterprise is an enterprise that competes by using up-to-date information to progressively remove delays to the management and execution of its critical business processes."* (Source: Gartner, Inc., "Gartner Definition of the Real Time Enterprise," 10/1/2002, Ref. COM-18-3057)

Also note that the Real Time Enterprise is not scientifically "real time" in terms of the remarkably low end-to-end latencies found in real time embedded systems, robotics and manufacturing plant controls. Instead, RTE is about enterprise responsiveness at the business process level - and all the best practices and information technologies

Short and long term paths to RTE

In many different types of companies today, there are substantial, long-term initiatives to achieve RTE capabilities. Many of these efforts involve advanced technologies such as Web services, XML, J2EE and .NET. Distributed, n-tier software architectures and Web services may well be the ultimate solution to RTE requirements but the effort and cost involved is

typically massive. For instance, the cost of moving legacy production systems to an integrated and extensible web services architecture is typically measured in millions or tens of millions of dollars and years of development work.

The Web services work must go on, but for companies that need a fast and cost effective path to RTE today, Quest Software provides tools that can move organizations along the path to RTE by automating and streamlining application management throughout a company's technology infrastructure. Quest's management, replication and development tools support RTE requirements non-intrusively, maintaining complete compatibility with both legacy and advanced distributed architectures.

Quest application and database tools can move enterprises rapidly towards RTE because they eliminate downtime, shorten maintenance windows and boost application performance across the full end-to-end scope of the enterprise, from core back office systems to sales and customer relations to OLAP and decision support. Quest tools also work across the entire application development lifecycle from testing to production to maintenance and migration.

Requirements for RTE

Quest Software believes that organizations with RTE aspirations are best served by paying attention to three major information factors: performance, access and availability.

Performance. As enterprises move towards RTE capabilities, there is a more timely and flexible movement of data throughout the enterprise. The payoff for high velocity information flow is faster product cycles, a more streamlined supply chain and better market responsiveness. High information velocity can also contribute to the success of any project that puts unusual stresses on the IT infrastructure, e.g., mergers and acquisitions, major consolidations and restructuring.

Access. RTE is more than just fast moving information. It's not enough to speed up data within core production areas, enterprises also have to use production information to improve management and decision making activities. So in addition to information velocity, the RTE requires universal data access. Data needs to be replicated seamlessly from production systems into reporting and decision support systems in near real time. When managers, planners and front office knowledge workers have access to multiple data sets whenever and wherever they want them, the enterprise can anticipate problems, react proactively to business challenges, and recover quickly when unforeseen difficulties emerge.

Availability. An IT infrastructure can have high velocity, accessible information, but if it's not highly available around the clock, RTE goals will not be achieved. Full 24x7x365 availability for critical applications and databases is not a trivial undertaking and it requires the right tools and best practices on several fronts. Availability starts with the testing and debugging of preproduction software, then on to end-user response-time issues tuning during production, and finally, ongoing maintenance and end-of-lifecycle migration. And of course, all of these activities have to be secure and non-intrusive to business operations.

In summary, the Real Time Enterprise is faster, but it's also a lot smarter because of the systematic distribution of information to management and knowledge workers throughout the enterprise in many different departments and business units. And to fully take advantage of information speed and ubiquitous access, the enterprise application infrastructure also must deliver continuous availability. IT infrastructure has to be highly available, manageable and maintainable - in other words, bulletproof.

A bulletproof IT infrastructure

Business planners and IT architects who aspire to RTE capabilities should consider the requirements that have been laid out by the Gartner, Inc., a leading research and consultancy firm that has done considerable thinking in this area. Gartner says:

“With no slack in its internal processes and tight links with trading partners, the Real Time Enterprise is constantly exposed to public view. It therefore needs a bulletproof IT infrastructure. In such an infrastructure, components rarely fail and no component is essential. But this is not enough. It also requires systems management to foresee problems (and move promptly to address them) and to assure business continuity even if all these precautions fail.” (1)

Gartner concludes that advanced software management processes and best practices are necessary enablers of the RTE paradigm:

“Although reliable hardware and software are the foundations of a robust infrastructure, RTE capability will not be assured without world-class management processes. Processes for systems management, security and business continuity planning are particularly critical.” (1)

Clearly, RTE is more than just speeding things up. The goals for RTE laid out by Gartner and other industry experts can be summed up as follows:

- Make up-to-date information widely accessible
- Clearly define and automate processes
- Foresee problems and react quickly to resolve them
- Recover rapidly from the unforeseen
- Deliver a bulletproof IT infrastructure

In the long term, these goals will be attained by .NET, EAI, J2EE and major N-tier distributed application efforts. In the meantime, enterprises can move a long way towards these same goals using today's IT resources and advanced application management tools.

RTE here and now

Quest Software is an ideal partner for enterprises moving towards RTE operations with existing resources because Quest products maximize applications performance and availability up and down the technology stack and throughout the life cycle. Quest's approach to application performance management is holistic and comprehensive, covering all major IT infrastructure components: operating systems, Web servers, file servers, email systems, database, network, application servers, storage and printers.

The functionality provided by Quest Software products can be divided into several areas including: database management, high availability, applications monitoring, and Microsoft infrastructure management. All of these areas are key to full realization of RTE with existing IT assets.

Database management. In the area of database management, Quest tools ensure that your business-critical Oracle, DB2 and SQL Server databases are performing well and highly available, a key criteria for RTE. Quest database tools cover all aspects of database design, development, administration and performance management. This end-to-end approach is necessary because RTE goals will not be met if downtime and latencies are introduced in any part of the lifecycle.

High availability. Quest Software products help enterprises move towards RTE with database and application management tools that minimize both planned and unplanned downtime. Quest tools in this area reduce planned outages, optimize performance, offload reporting, facilitate data distribution, enhance disaster recovery, facilitate migrations and manage patches and upgrades with minimal downtime.

Application performance management. To truly become a real-time enterprise, IT departments must become business-aware — in tune with the business needs of the organization. Additionally, the RTE-oriented enterprise must detect, diagnose and resolve problems rapidly and proactively. Quest provides a suite of world-class performance management tools towards this end, providing detailed metrics on system performance and availability, as well as transaction response times for a complete end-to-end picture of application performance.

Microsoft infrastructure. Microsoft email, servers and applications have traditionally grown in a “bottom-up” manner from workgroups and departments. Quest gives enterprises the tools to consolidate, optimize and monitor Microsoft applications so as to create a more available and non-stop office automation infrastructure with better information access for all.

The remainder of this document will examine the capabilities of Quest's database management, high availability, application performance management and Microsoft infrastructure management products within the framework of the RTE requirements developed above. Quest application performance management products are currently used in 75 percent of the Fortune 500, and in some of the world's largest and most mission critical enterprise applications.

Make up-to-date information widely accessible

Operational latencies and poor market responsiveness are often caused by “information silos” that isolate and fragment information that is vital to the management and the ongoing refinement of business processes. In the RTE-enabled enterprise up-to-date information is available wherever it is needed, with little cost or delay.

Quest Software's **SharePlex®** is an industry-leading data replication product that can deliver “near real-time” copies of production databases throughout the enterprise for a wide range of functions. For instance, copies of the production databases can be replicated and made available to business intelligence and decision support workers - increasing the velocity of sales, manufacturing and distribution processes.

In many enterprises, management must wait for reports that are only published on a periodic basis - this can add days or weeks to response times. With SharePlex, a full copy of the production database can be created and automatically updated in real-time solely for reporting purposes. SharePlex replication is non intrusive on both database servers and the network bandwidth, which means that the performance and integrity of critical systems are not impacted.

To meet RTE requirements for rapid and controlled document distribution, IT managers may want to consider Quest's **Vista Plus® Suite**, a full featured information management system that delivers documents, reports and print output throughout the enterprise. The information that is delivered by Vista Plus can come from a wide variety of applications including Oracle E-Business Suite, PeopleSoft, SAP, and other mainframe or legacy applications. Documents are stored in a central repository and archive system that is highly scalable to even the largest enterprises. The formats that documents are delivered in include HTML and PDF. Vista Plus Suite is an important tool for enterprises who wish to move toward RTE operations with rapid, consistent, secure delivery of reports and information from all types of business applications.

Clearly define and automate processes

Another major impediment to RTE is the lack of automation and standardization of core system management processes. Human errors are unfortunately a major cause of unscheduled downtime and associated business latencies and lowered responsiveness. Quest addresses this concern with a number of products that automate critical business processes that might otherwise be subject to more frequent failure due to manual execution and lack of consistent procedures.

Quest's **FastLane ActiveRoles** is a good example of a product that streamlines, facilitates and automates the management of software infrastructure components. Fastlane ActiveRoles enhances Windows 2000 management by providing centralized management of Microsoft Active Directory security and content across the entire enterprise. ActiveRoles lets administrators define logical grouping of rights and provides a scalable and reusable mechanism for setting and maintaining security. This provides a distributed mechanism to automate object (users, groups, computers, etc.) creation through templates and ensures directory consistency through ongoing enforcement of data integrity rules. ActiveRoles can reduce operational latencies caused by errors in manual Active Directory administration by automating policy management in Microsoft server environments.

A companion product to ActiveRoles, **FastLane Reporter**, checks and reports on the administrative and security status of Active Directory objects and permissions throughout the enterprise, and reports on any user, group, object or file permission. This highly automated facility helps enterprises meet RTE goals by reducing error-prone manual manipulation of Active Directory data.

In the database realm, **Quest Central** for Oracle and DB2 helps enterprises streamline, automate and optimize applications infrastructure with a full suite of tools for critical database management. Quest Central facilitates RTE goals by automating and simplifying object management and migration, improving the performance of SQL operations, analyzing database SQL workloads and resolving space related performance issues. The result is greater DBA productivity and a reduction in the downtime and business process latencies that are associated with manual execution of ongoing database administration tasks.

Quest's SharePlex can also be used to help enterprises define and automate key processes within the application infrastructure to meet RTE requirements. Along with its mirroring and replication capabilities, SharePlex automates processes that consolidate or broadcast information throughout the enterprise. For instance, SharePlex can automatically consolidate data from many databases across local or wide area networks. Extracted data from different sources is logically "joined" and isolated from production systems and made available to reporting applications and knowledge workers without disruption to core business operations. Because this process of rolling up, consolidating and distributing data is well defined and automated, the effects of manual errors are largely eliminated - hence raising the level of information velocity, access and availability.

Foresee problems and react quickly to resolve them

With enterprise applications forming the essential foundation for revenue generating business processes in most organizations today, an RTE strategy must provide proactive monitoring and problem resolution at all levels of the software stack. Quest's **Foglight®** is a comprehensive solution designed to monitor today's complex business applications. Unlike other monitors that only detect problems within individual components in the IT infrastructure, Foglight correlates components at different levels of the architecture and makes them all available in a single interface. Foglight detects and proactively identifies problems before they affect users and has specific knowledge of SAP, Siebel, PeopleSoft, Oracle, Microsoft Exchange and other applications. Foglight can also be adapted easily to many niche enterprise applications and custom programs.

Some monitoring environments benefit greatly from a highly graphical representation of system and application components. This capability is provided by Quest's **Spotlight®**, which graphically displays in real time the actual flow of data in Active Directory, EMC Symmetrix, Microsoft Exchange, Oracle, Microsoft SQL Server, and various related Web and file server environments.

Quest also provides additional problem resolution support for Oracle and DB2 applications within the Quest Central database management environment. If Foglight and Spotlight have identified a problem in a database, Quest Central will resolve it fast with expert tuning advice.

For the hardware architecture, Quest's **Big Brother** works in multi-server data center environments to monitor system and network-delivered services for availability. Once Big Brother detects a problem, it immediately notifies the administrator by an e-mail, pager or text-messaging alert - allowing for quick response and resolution. Big Brother integrates with Foglight to provide thorough automated monitoring and proactive problem resolution of the full hardware and software technology stack, which is a key requirement of RTE.

Deliver a bulletproof IT Infrastructure

An organization with high levels of information velocity and accessibility is well on its way to realizing RTE goals, but if the application infrastructure suffers periodic outages and downtime, then RTE benefits will remain elusive. To avoid downtime and lowered applications availability, enterprises need a highly reliable and available infrastructure that can adapt and adjust to real world conditions without failures and performance degradation.

One of the biggest challenges for IT groups pursuing high availability is the downtime that occurs when databases require reorganization and restructuring - a reoccurring task that is never permanently "fixed." But there is a solution. Quest's **LiveReorg**, part of the Quest Central suite, lets IT managers optimize database performance by reorganizing and restructuring Oracle databases in the live production setting with virtually no downtime.

Quest's SharePlex is another tool that can greatly increase applications availability and uptime. SharePlex uses its industry-leading patent-pending replication technology to create and maintain in near real time a mirror replication of Oracle databases and file systems. When the IT architecture is threatened with a disaster, data corruption, transaction overload, migration, maintenance or other planned outages, SharePlex replication dramatically reduces downtime and a low latency infrastructure. A number of leading companies are now using SharePlex to mirror entire production databases into a remote disaster recovery center. In this case, SharePlex's automation and intelligent conservation of network and system resources ensures that production systems and infrastructure are not adversely impacted by replicating activities. When facilities and computers are repaired after a disaster, live data in the remote disaster center is then seamlessly mirrored back into production applications without loss of transaction processing continuity.

Bulletproof development and testing

Much of the discussion so far has focused on information velocity, replication and availability for production systems. But a low-latency RTE infrastructure really begins in the development phase, where specialized testing and optimization tools can greatly improve the reliability and performance of production apps. For instance, Quest **JProbe** is an industry-standard performance tool for tuning Java and J2EE application code. JProbe allows developers to rapidly diagnose and resolve performance problems in enterprise Java software, ensuring production-ready applications that make performance, scalability and RTE goals a reality. In the database development environment **TOAD** is a powerful and efficient graphical interface that makes PL/SQL development faster and easier and simplifies database administration

tasks. TOAD editors allow users to work on multiple files simultaneously — even different file types such as SQL, PL/SQL, HTML, Java and text. If RTE goals are to be met, testing and benchmarking is a critical aspect of the software development and maintenance environments. Quest **Benchmark Factory** helps ensure a bullet proof infrastructure with a load testing solution that scales throughput to virtually unlimited users. Benchmark Factory tests the full spectrum of internet, database, E-mail, and file servers, which lets developers discover the limits of critical IT resources before they go live.

Conclusion

The Internet was supposed to create a new kind of commerce model that allows enterprises to interact seamlessly with customers and partners at the “speed of business.” But without a solid internal applications infrastructure, goals for the extended, low latency enterprise will not be realized. In the long term the promise of real time, highly integrated enterprises will be realized with major .NET, J2EE and EAI initiatives. But in the mean time existing application and IT resources can be leveraged with Quest application management tools, allowing IT managers to close the gap between enterprise end users and enterprise information. Quest enables an end-to-end proactive approach to the Real Time Enterprise by maximizing the value of legacy, current and emerging IT resources.

SIDEBAR:

Pratt & Whitney deploys LiveReorg - uptime takes off

Pratt & Whitney Canada (P&WC) is a world leader in the field of aviation engines and engines for other industrial applications. P&WC runs critical SAP applications used for maintenance, payroll, customer support and other company operations, supported by an Oracle database. The SAP system contains over 22,000 tables (about four terabytes in total size), some with more than 80 million rows – and growing daily. In support of global operations, this data needs to be available on a virtually 24x7 basis.

When P&WC first went live with their SAP environment, the IT department scheduled a weekly six-hour maintenance window for hardware upgrades, reorganizations and maintenance. However, that window did not give them enough time to reorganize many of the larger tables. As business expanded, the IT department experienced additional pressure to reduce or eliminate SAP system downtime. This was impossible using traditional reorganization procedures.

P&WC evaluated several tools on the market, and the only tool that met all of their objectives was Quest Software’s LiveReorg®. LiveReorg’s patent-pending technology allows users to optimize database performance by reorganizing Oracle databases without taking the system offline.

P&WC has two sets of disks that are mirrored, resulting in four images of the production databases. Each of these is approximately one terabyte in size. When they reorganize a table, they actually reorganize four copies of that table simultaneously. They can also schedule LiveReorg to run on its own without supervision – a big advantage to the IT department and system users. “LiveReorg has taken the work out of the equation for us. Live reorganizations are automatic and problem-free – and we no longer compromise SAP system availability or performance in any way,” said Fernand Gosselin, database administrator for CSC, a consultancy working with P&WC.

In P&WC’s rapidly growing environment, LiveReorg has helped improve global response time by approximately 20 percent.

SIDEBAR:

SharePlex addresses excessive ERP reporting delays

A large manufacturer with several hundred business units found that, in the current business and regulatory climate, it was taking far too long to roll up periodic financial information from its many different business units. To comply with recently-enacted laws such as the Sarbanes-Oxley Act, the company was under pressure to provide better reporting and guidance to the financial community. However, the traditional batch system was taking too long. Because it has so many subsidiaries, the company's ERP system is like a tree that requires reports to make their way through all the organizational branches as part of a lengthy rollup process.

To fix this substantial problem, the company used Quest Software's SharePlex for automated data replication. SharePlex enabled the creation of an efficient, independent reporting system that is a near real time copy of data residing in the Oracle databases that support the ERP applications. By bridging all the reporting branches automatically, the SharePlex-based reporting does not interfere in any way with production databases – resulting in financial reporting that meets the transparency requirements of today's fast moving markets and compressed business cycles.

SIDEBAR:

Replicated point-of-sale data keeps retailer competitive

A national retail chain was not getting sales information to its planners fast enough. The company's managers needed to make real time decisions but the reporting cycles were taking days or weeks. Particularly during holiday peaks, the lack of visibility of sales and inventory levels was reducing business competitiveness. With Quest SharePlex, the company was able to replicate live point-of-sale data directly into the decision system's data warehouse in near real time. Because SharePlex works seamlessly with Oracle Financials, the reporting cycles were cut to just hours, allowing very accurate analytical planning to be conducted based on sales data that's extremely up to date. Only SharePlex can deliver this sort of seamless automated database replication with such low deployment time and cost.

SIDEBAR:

Myths about Real Time Enterprises that You Can Live Without:

- It takes a complex, 18 month or more development effort before the benefits of (near) real time methods are realized. (With Quest Software's applications management tools, enterprises can make progress toward RTE goals with existing resources in weeks, not months or years.)
- To get an ROI from real time business processes, you must replace large amounts of your IT infrastructure with J2EE or .NET services. (Quest Software tools help enterprises achieve information velocity and ubiquitous information access, using existing databases and Microsoft infrastructure.)
- No matter how you do it, putting real time business processes in place is going to be disruptive and expensive to deploy (Quest Software products ensure that migrations, consolidations and new deployments take place with minimal disruption and downtime.)
- An adaptive and flexible IT infrastructure is by nature less reliable and available. (Quest tools help IT staff build an infrastructure that is much more responsive to business dynamics and competitive demands - without sacrificing applications availability.)

(1) Source: Gartner, Inc.; Web article: "Implementing the Real-Time Enterprise Offers Big Business Benefits"