Performance Management

*Providing the solution for proactive business
and IT operations management*

Jamie Thomas
Director, WebSphere Strategy and Communications,
Application Integration Middleware Division,
IBM Software Group

Contents

Executive summary

As enterprises strive to become more competitive, they are scrutinizing the effectiveness of both business and IT operations. Companies are forced to improve operations and invest in new solutions with flat-to-declining operational budgets. Manufacturers, for example, struggle to hold product inventories to a minimum while still meeting changing customer demands. But they lack visibility into real-time supply and demand needs. They must be able to manage business and IT activities across and beyond the enterprise as they occur, to recognize areas for improvement, and to implement actions quickly that optimize business performance and IT utilization.

For example, business managers should be able to monitor the supply chain minute by minute and adjust manufacturing activities to meet overall business goals. Although many companies have started to integrate their business processes and manage their overall IT infrastructure to gain efficiencies, they need to adapt these resources more effectively for greater time and cost savings. Today, managers are able to analyze historical data and static reports from their operations to identify trends and communicate business results. Now, they want access to real-time information, on demand, to make effective decisions faster. Ultimately, they want a solution that surfaces timely information, proactively makes recommendations and provides a dynamic mechanism for the underlying systems to respond.

IBM is helping companies improve their competitive position with its e-business on demand™ strategy. Through e-business on demand, IBM strives to help the customer become an enterprise whose business processes — integrated end-to-end across the company and with key partners, suppliers and customers — can respond with flexibility and speed to any customer demand, marketing opportunity or external threat.

Performance Management, enabled by IBM software and supported by a rich Business Partner network, directly addresses this strategy by emphasizing monitoring and management of both business process and IT events. By

Performance Management is based on an open event framework, providing the mechanism for consistent event recognition and monitoring across applications, middleware and IT infrastructure.

coordinating both the business and IT events within an integrated framework, enterprises are better able to make decisions to align IT and human resource utilization to meet business priorities. While enterprise business executives have the results of core business process execution on their desktops to enable timely decision-making and business transformation, enterprise IT executives can leverage business views of the IT infrastructure to recommend IT-specific actions that will generate the greatest benefit to their businesses.

Performance Management is based on an open event framework, providing the mechanism for consistent event emission and monitoring across applications, middleware and IT infrastructure. In addition, the event management capabilities at the business-process level enable business-process transformation, and the event management at the IT level drives policy-based orchestration of IT resources. This framework will allow IBM middleware, customer-developed and partner-led applications to participate in a comprehensive management system. The IBM approach also includes a robust application development life-cycle platform, providing core development capabilities to support performance management deployments. Within the open environment of performance management, independent software vendors (ISVs) play a key role in providing applications that can be easily monitored and managed. Furthermore, IBM and partners will provide industry-specific dashboards to allow extended monitoring capabilities.

The starting point for a fully enabled Performance Management deployment varies depending on existing installed infrastructure and specific business needs. IBM Business Consulting transformation services can be leveraged to understand the options for approaching a Performance Management deployment. In addition, we will discuss several alternatives in this paper. The full portfolio of integrated, industry-leading IBM software helps companies realize business value today, enabling enterprises to gain the flexibility and speed to respond to any customer demand, market opportunity or external threat. This paper is intended for business executives, and line-of-business

(LOB) and IT managers who will use performance management software capabilities to improve business operations and performance.

Business operations efficiency with Business Integration

In the current economic climate, businesses expect IT infrastructure investments to produce near-term return on investment (ROI) as well as long-term operational efficiency. New technology investments are evaluated for their ability to improve business performance by cutting costs, increasing productivity and profits, and providing the flexibility to change as business needs change. Many companies are realizing these benefits as they integrate people, processes and information across their businesses.

Enterprises can improve business performance by evolving from an environment of manual or isolated business functions with limited feedback to automated, connected and integrated processes with highly visible metrics. For example, they can provide higher levels of service to customers when Internet operations are linked with back-office systems or when e-commerce systems are synchronized with retail business operations and other customer channels. And the business can be more effective when intra-enterprise business systems are connected, such as customer relationship management (CRM), enterprise resource planning (ERP) and supply chain management (SCM).

Unprecedented levels of integration are required to achieve this linkage, starting with the ability to model and simulate a business process and update that process proactively. Then businesses need to integrate people, processes and information throughout the enterprise, and to connect with customers and partners for efficient business-to-business (B2B) operations. Finally, companies should be able to monitor, analyze and manage business processes from start to finish.

IBM cross-platform business integration software provides a full range of support for these higher levels of integration. This software provides the capabilities for modeling, integrating, connecting, monitoring, and managing

current and new processes within your company and across your value net of partners and customers. It provides rich information management capabilities providing the means for access, integration, and analysis of diverse, distributed data from both real-time and historical perspectives, and capabilities for creating portal-based workplaces. These IBM software capabilities can help deliver business benefits, along with complementary IBM Business Partner solutions. In addition, IBM software provides visibility into critical events, activities and metrics across these connected business systems and integrates these values with historical and operational data for timely business management. See Figure 1 for an example of IBM WebSphere Business Integration Modeler solution.
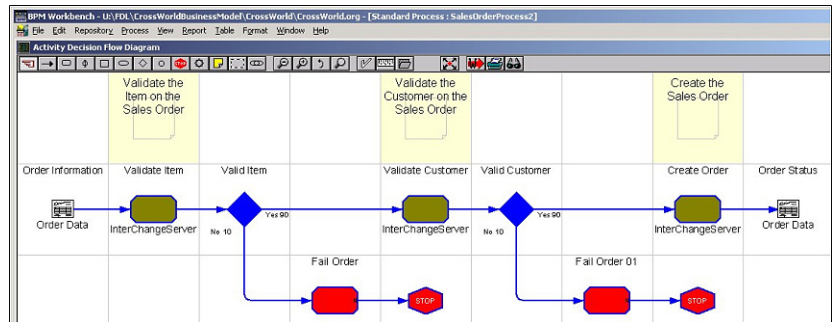

Figure 1. IBM WebSphere Business Integration Modeler.

Your company can use one or more of these IBM business integration capabilities to help eliminate operational inefficiencies and increase your competitive advantage. IBM Business Integration solutions use common components and facilities to optimize the enablement of your business integration solution. A consistent application development life-cycle model and common modeling tools enable understanding of deployed business processes. A common application runtime platform speeds deployment. A common event framework allows consistent monitoring of business events at an enterprise level. Through this visibility, you can improve process-specific parameters, leading to reduced costs and increased profitability. See Figure 3 for an example of WebSphere Business Integration Monitor.

Highlights

*The ability to tailor information avail-
ability and access is a core capability
of business operations efficiency
within business performance
management.*

For example, a business manager can view key process results on the desk-
top, including current and historical statistics of events completed and steps
executed. This information tells management how projects are performing
and what specific issues need resolution. Executives can easily view busi-
ness metrics and alerts tailored to their areas of responsibility. Information is
displayed through business activity workplaces that enable roles-based data
reporting, leveraging the capabilities of a portal framework to integrate
industry-oriented dashboards. The ability to tailor information availability
and access is a core capability of business operations efficiency within perfor-
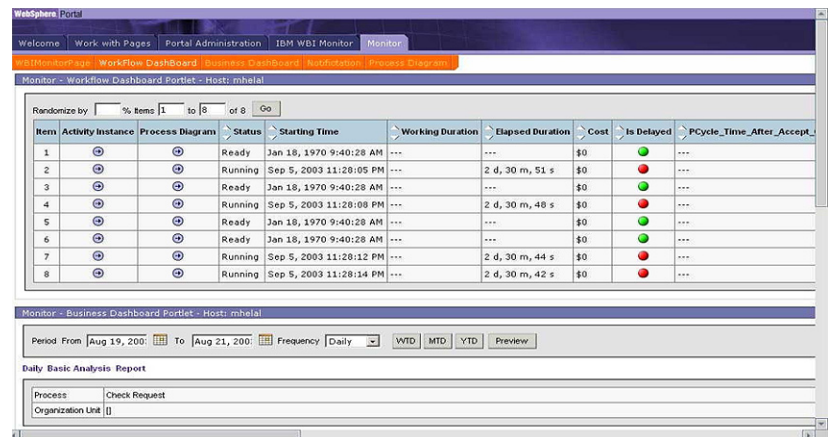mance management. See Figure 2 for an example of WebSphere Business
Integration Monitor.

Figure 2. WebSphere Business Integration Monitor — Workflow Dashboard

IT operations efficiency with Business Service Management
While the business executives are streamlining their operational efficiency to
understand how well their business processes and systems are delivering results
to the business, the IT Executive team has a similar efficiency challenge.
IBM can help to solve this challenge through business service management
capabilities. Today, most IT departments are managing extremely complex
infrastructures including hardware, software, networking and applications.
Although all of these resources were deployed to provide a particular service to

the customers, employees or partners of the business, most are managed solely as IT resources. This can lead to some significant inefficiencies when trying to drive the best results to the business bottom line.

For example, in many companies, the IT department collects a variety of IT events into a central console. Many times, this console (see Figure 3 for an example) contains some level of filtering, correlation, or root cause analysis to reduce the thousands of events into the key items that require attention.
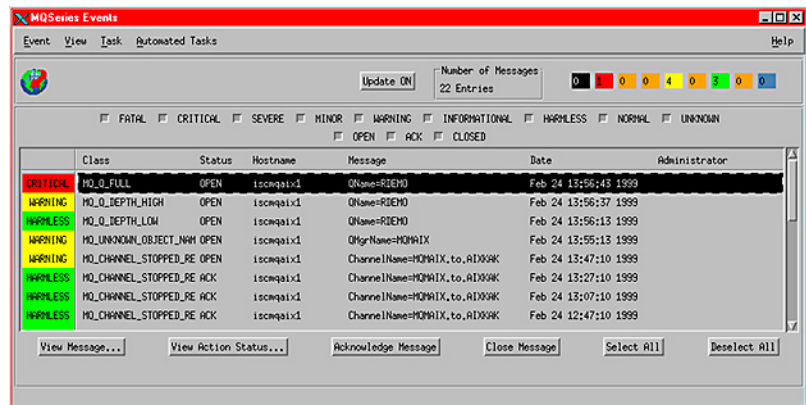

Figure 3. Example management console.

The IT department will then work on the most critical types of events (for example, resource failures) on a first in, first out basis. Although this can be helpful in reducing the number of events, rarely do the IT departments have a good understanding of which business systems are affected by a particular IT resource, making it difficult, if not impossible, to prioritize problem resolution by anything other than first in, first out.

Situations such as the one outlined often lead to scenarios in which the IT team has focused on the first major issue in its queue, such as a server resource failure, only to realize that the particular server in question was supporting the company's online HR application or other less-critical business system. The second or third item in the queue may have been the failure of the company's online ordering system in a retail scenario, or a financial trading application in a financial scenario. Each of these business systems is much more critical to the overall health of the business, but because the IT team prioritizes responses on a first in, first out basis without business context, this misprioritization would have been overlooked.

IBM Business Service Management solutions can help enable customers to increase their IT operations efficiency by helping to place IT management in context of the business services that it supports. Now, when multiple IT problems appear, it is significantly easier for the IT team to determine which action to address first. For example, the executive dashboard shown in Figure 4 is an example of IT systems that can be viewed in a business context rather than as isolated IT resources.
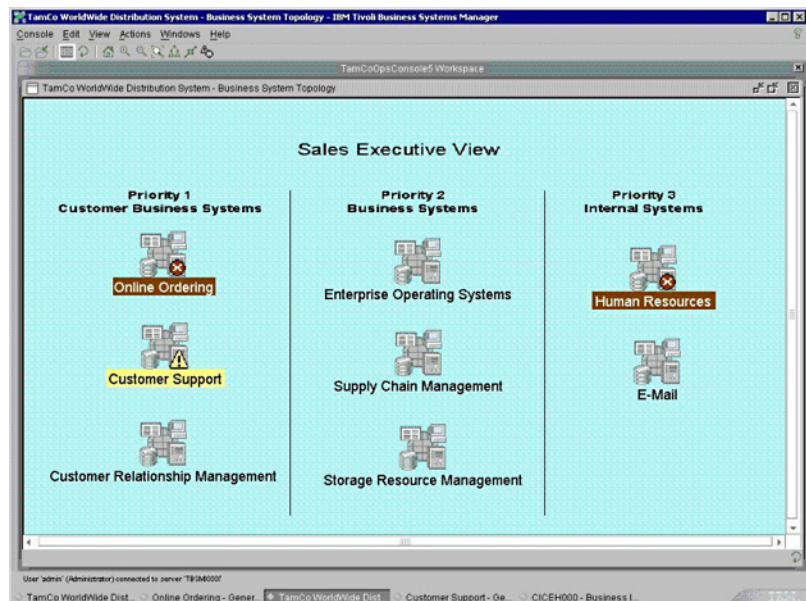

Figure 4. Systems view by priority levels.

In addition to prioritizing actions, IBM Business Service Management solutions also help IT departments to identify the root cause of a particular problem with a key business service to reduce the time that many teams usually spend talking across silos of management (for example, databases, networks, applications, and so on) to identify the root cause. Industry analysts have stated that up to 80 percent of problem-resolution time is in identifying the cause of the problem. IBM Business Service Management Solutions streamline this process by identifying all of the key IT resources that support the business system in a logical topology (see Figure 5).
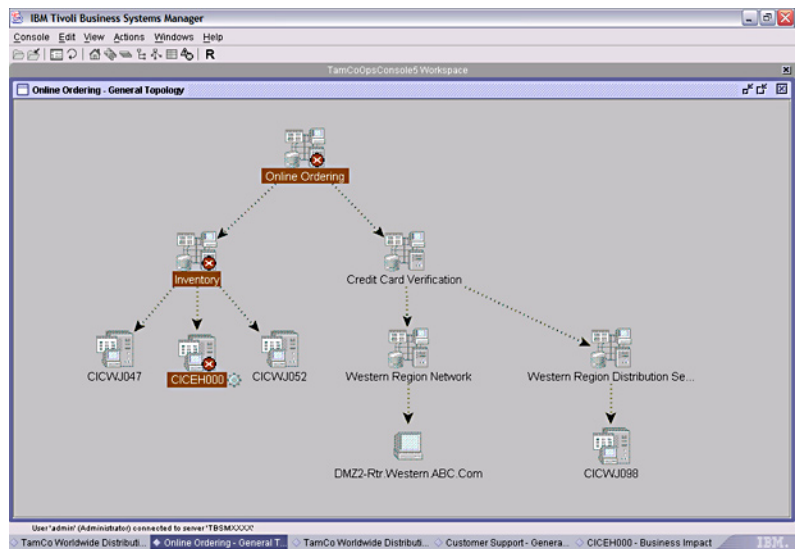

Figure 5. Logical topology view of business systems.

By looking at a business system's topology and understanding the root cause of the problem, IBM solutions can help reduce the time that it takes to get critical systems up and running in real time.

IBM software helps you identify the root cause for problem conditions and recommends solution paths to keep your business running smoothly.

In addition to offering these real-time solutions, IBM Business Service Management also helps increase IT operational efficiency by helping IT departments predict problems before they occur. By leveraging historical information about the health and performance of the infrastructure, IBM Business Service Management solutions can predict trends that may put service level agreements (SLAs) or internal thresholds at risk, before these risks actually materialize. This capability enables IT operations efficiency through proactive problem avoidance versus reactive problem resolution. At the same time, personnel managing the IT systems can understand how these systems are performing and affecting business processes.

The solution: Performance Management

When business integration and business service management are deployed together, enterprises take a giant step toward transforming their companies into on demand businesses. The combined capabilities allow companies to execute more rapidly and with greater flexibility than the competition, giving them a competitive edge in a challenging and dynamic marketplace.

IBM solutions for business and IT operations efficiency combine information related to both business and IT activities, gathered from a number of systems to provide insight into process effectiveness, business performance and infrastructure resiliency — in real time.

Exception conditions are flagged based on metrics defined by the needs of the business and IT managers. Using these metrics, or key performance indicators (KPIs), IBM software helps you identify the root cause for problem conditions and recommends solution paths to keep your business running smoothly. KPIs could represent things like top-level business measurements for the CEO, process metrics for the functional VP, or infrastructure service levels for the CIO. KPIs may measure performance, performance against targets or

performance compared to historical trends – combining information from multiple sources.

Businesses may have a valued gold customer, for example, who should always have high-priority order fulfillment. If that customer's order encounters a condition that prevents it from processing on time, the business can now identify the situation as an exception condition and recommend actions to drive this order through the system quickly.

In manufacturing, if interactions with suppliers are bogged down and preventing you from meeting production goals, IBM software solutions can provide alerts and exception paths with time and cost estimates for you to choose from. So you can keep inventories to a minimum and meet customer demands.

Business results are tracked based on the KPIs chosen by business managers, which will vary by industry and operational focus. Some examples of KPIs are noted in the Table 1.

These KPIs are generated and coordinated across the business process and IT operational software layers through the exploitation of an open event infrastructure, which provides a common mechanism for the emission of events. This level of management enables business managers in an integrated enterprise to examine and react quickly to operational business events – whether problems or opportunities – to create competitive advantage. Traditionally, for example, managers collect monthly metrics and can react to problems discovered through this reporting method within a three- to six-month timeframe. With IBM software capabilities, you can generate real-time KPIs, view these in perspective with previous experience, and adjust resources immediately to increase output in areas that fall below plan.

KPI examples	
For distribution processes	• Percentage of deliveries on time • Delivery days late versus early • Delivery days late versus early by location incomplete deliveries • Freight price percentage of revenue
For credit processes	• Customer credit exposure • Customer average arrears analysis • Customer credit limit exceeded • Credit risk versus capital reserves
For tracking customers by segment	• Change in customer retention rate • Customer costs to serve trend by quarter • Segments with lower than expected profits • Net change in customer satisfaction
For inventory processes	• Average stock level and value • Zero stock days • Inventory stock outs • Reserved quantities and values • Withdrawn quantities and values • Book and physical stock group currency value • Full-year moving average of top 50 stock item levels
For procurement processes	• Open days for request for price quotation, purchase order and requisitions • Average purchase order and contract value • Days from requisition to purchase order • Supplier scorecard of on-time deliveries • Supplier scorecard of percentage of goods delivered broken

Table 1. KPI examples for various processes.

Results are displayed in a graphical, intuitive, easy-to-understand format. Alerts and business results must be displayed to the right people at the right time in a format based on the user's role. This access to business-relevant data must make it easy to:

· *View business results in real time, with historical perspective, based on KPIs*

· *Receive an alert of an exception condition based on real-time analysis of KPIs*

· *Receive related information to qualify business operations alerts*

· *Respond to an exception condition*

· *Understand where even a slight change in a business process will bring business advantage*

- *Perform a change to a business operation*
- *Make better business decisions quickly*
- *Identify new business opportunities*

IBM software enables monitoring and managing of current business and IT events through intuitive views customized for multiple roles in an enterprise, called business activity workplaces. For example, line managers need high-level business metrics, analytics and views of collections of real-time events, while IT personnel need to delve into workflow details and individual processes, in addition to using tools for IT systems management. Various roles include executives, business process managers and IT technicians (for a sample, see Figure 6).
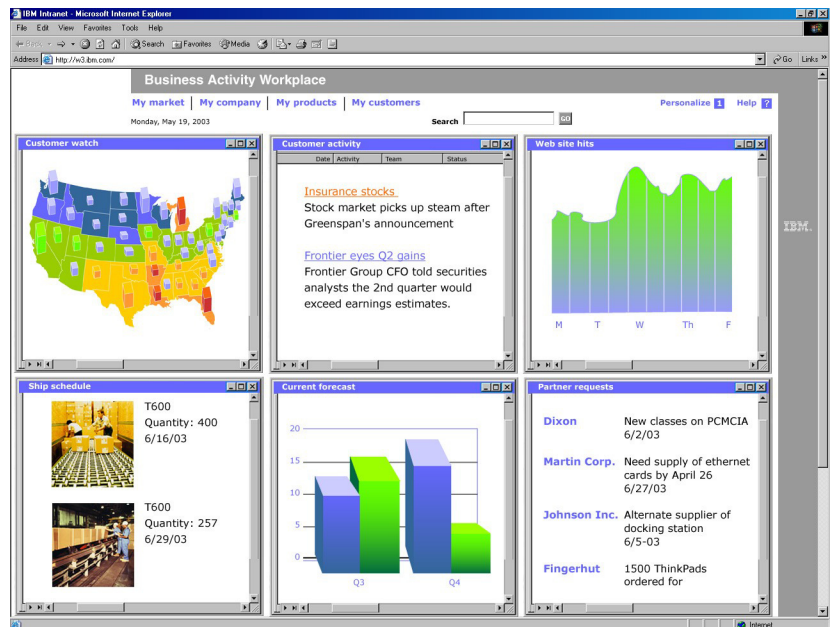

Figure 6. Business activity workplaces display business metrics.

IBM software supports key industries such as banking, financial services, retail, automotive and others.

Business activity workplaces must also accommodate the needs of specific industries. IBM software supports key industries such as banking, financial services, retail, automotive and others, and IBM is working with its Business Partners to help develop business activity workplaces tailored to specific industries. And IBM Business Consulting Services can further help you understand those metrics most relevant to your industry and your unique situation.

How to get started with Performance Management

As discussed before, the approach that you take for Performance Management will depend on your specific business needs, critical projects identified and your existing IT infrastructure. To assist in examining how you may create your "roadmap," let's examine several example situations.

Take a financial services company, with objectives to manage and optimize the business processes and IT operations around how it delivers credit and loans. With a large and diverse "checking" account base, and an existing analysis of the "rating" and "expected value" of the customers, it plans to extend further loans and credit to customers who have good ratings. Key performance indicators (for example, "number of customers possessing loan type X") have been set, and campaigns and offers have been planned to drive loan adoption to the flagged customers. The loan process can be delivered through any sales channel; through branches, call centers and the Internet. The company wants to track the effectiveness of each of these "channels". At the same time, lower-rated customers who apply for loans constitute more financial risk for the company. Hence, the company executives want a much better view of the types of customers accepting particular loan arrangements, and for specific groups of customers, a view of the level of risk. These key indicators would be delivered in a "real-time" view, to be able to address issues in loan processing operational efficiency. Others will be reported over a period.

For example, credit-checking and fraud-management systems support key aspects of these processes. The route to achieving excellent performance

management therefore lies in ensuring that the business and IT operations are mutually supportive. Given these summary business objectives, we now need to understand the "starting point" to our solution, using our existing install base as a guideline. Let's now examine three separate possibilities:

Scenario 1

The company has an extensive IT operations management infrastructure, utilizing IBM Tivoli® and partner-developed sofware. This infrastructure provides coverage of the applications and systems that are used in loan origination and loan servicing. It has documentation of existing loan, fraud and credit-checking processes, but does not yet monitor business processes in operation. The company is, therefore, not able to respond to "out-of-line" loan process situations, such as an alert caused by backlog in final authorization for gold customers caused by staffing issues.

In this situation, senior IT management has a good view of how the infrastructure and systems are performing, but the business managers have no equivalent view.

Scenario 2

The company has a sound understanding of the business processes. The loan processes are prioritized, optimized and suitably automated. There are set measures associated with parts of the loan process, and the company executives can view overall process activity, such as number of customers passing key stages of qualification and other key loan-origination metrics. They achieved this using IBM WebSphere® Business Integration offerings, integrating a heterogenous environment including customer and partner developed applications. However, although it is clear that systems and application outages will cause disruption to overall performance, the IT operations staff does not have a view as to the specific issues affecting overall performance, and cannot commit quality of service levels, nor predict potential IT issues for early resolution.

In this situation, the business managers have a good view of the end-to-end process, but when systems issues begin to affect operations, IT managers have insufficient information to circumvent the issues.

Scenario 3
As in both scenarios before, the company has analyzed diverse data sources including the customer base, extracted significant information concerning customer ratings, and discerned expected value of customers through deployment of IBM Data Management products and BI offerings. They have also preset key indicators based on this customer analysis. However, the company has not optimized the business processes, and cannot see overall business process and IT operations performance. The company must establish a baseline for process optimization and a framework to optimize IT.

The roadmap for each of these situations is obviously different. In the first scenario, even though the loan processes and the targets for achievement are established, there is no automated facility to view loan process operation or operational alerts, and no method to measure success indicators. In this case, the technology roadmap would include extending the existing IT infrastructure with WebSphere Business Integration capabilities. The firm had modeled its loan process and automated them with WebSphere software, the key task then becomes adding the monitoring of the operating loan and credit processes with WebSphere Business Integration Monitor. If the business executives choose to, along with the tracking of the key indicators for the loans processes, they can also see a summary view of the IT operational status, delivered using the installed Tivoli infrastructure management capabilities. The IT staff would see a complementary view, including systems status detail, process operations summary and SLA information. The views are tailored to the user roles, with the base information being the same. At the next stage, the company can further link events from the IT operational environment, for example, credit-

checking system failure, to predict and avoid business issues through proactive measures. The IBM open event framework is key in delivering this approach as it enables both systems events and business events to be managed and tracked by the same infrastructure.

In the second scenario, the loan processes are understood, optimized and tracked, but there is no equivalent approach for IT operations. Any systems issues may interfere with the operation of core processes. IT personnel cannot predict likely IT operations events, nor rectify them rapidly when they occur. To ensure effective performance management, capabilities are extended to include Tivoli IT operations management with the existing business integration solution.

In the third scenario, the key analysis is in place, but neither the process management nor the IT operations management infrastructure is available. Establishing the framework to monitor and manage both IT and business process events is critical. There are many originators of events. They may come from packaged applications, customer-developed applications or from the systems that support them. Adopting the IBM open event framework allows the enterprise and its key application providers to manage these events, and to move quickly to establishing the required infrastructure.

Each of these customers approached their journey towards performance management in a different manner. However, each used IBM WebSphere Business Integration, Tivoli Business Service management and Data Management capabilities to achieve results. By exploiting an open event framework, they were able to extend the monitoring and management capabilities to the existing infrastructure, leveraging previous investments.

Future directions

IBM plans to extend its Performance Management capabilities to provide additional functionality, including:

- *Business activity workplaces customized for different user roles available on WebSphere Portal software. Today, WebSphere Portal software can be used to provide access to separate business activity workplaces for business and IT users.*
- *Business activity workplaces to support the requirements of specific industries, an extension of WebSphere Business Integration industry solutions.*
- *Enhanced analytical capabilities within the data warehouse to speed up and simplify the delivery of advanced KPIs.*
- *Business information integration from an expanded set of sources to further enhance the business understanding surrounding operational and IT events.*
- *Event feeds from pervasive devices based on pervasive computing software from IBM. This includes mobile devices such as phones, pagers and personal digital assistants (PDAs). It also includes infrastructure devices such as electric meters, turbines, trucks, air conditioners, oil pipelines and factory floor machinery. Data from these devices needs to be analyzed on the fly to identify events for which dynamic actions need to be initiated, such as alerts to mobile devices.*
- *Autonomic computing capabilities to help businesses build more automated IT infrastructures that need less human intervention for process flows and are more self-managing, self-optimizing and self-configuring. Through these capabilities, customers will realize the full benefits of an infrastructure that is able to respond to changing business conditions. Autonomic computing helps to improve return on investment (ROI), accelerate deployment and improve resiliency.*
- *Consolidated operations modeling that spans both business and IT assets to streamline model development and ensure integration of business and IT systems. This allows process reengineering to affect the core processes as well as the underlying IT infrastructure.*

Conclusion

The longer you wait to fix problems or correct bottlenecks in business operations, the harder it will be to compete in today's fast-paced marketplace. The software capabilities are available to help you gain insight into your critical business and IT operations in real time so you can correct problems as they occur and capitalize on new opportunities. You can make products available when needed, optimize monetary transactions, serve customers better, save inventory costs and improve supplier performance.

Consider adding performance management capabilities to optimize your business. Today, industry analysts are advising companies to identify key activities and business processes that drive their revenues and profits. Then managers can determine what metrics to use to optimize this set of critical business activities. Using a proactive approach will jump-start the development of an agile and flexible environment for e-business on demand.

IBM can help you get started on the path to true performance management. IBM's unique ability to understand and manage both business events and IT infrastructure events, allows customers to take advantage of tailored solutions to meet unique business concerns across industries. You can use IBM software to integrate and analyze information, manage enterprise systems and create role-based workplaces. IBM is an innovator and market leader in key areas that contribute to a comprehensive solution, including business intelligence, business integration, and enterprise systems management. IBM also has offerings to meet the unique needs of specific industries. Our comprehensive and open standards-based software is complemented by a wealth of Business Partner offerings and services to help you build an on demand business.

For more information

To learn more about performance management, visit:
ibm.com/software/info/topic/perform

To learn more about IBM Business Consulting transformation services, visit:
ibm.com/bcs

Reference

Vizard, Michael and Barbara Darrow. "IBM: Xperanto Rollout to Start in Early 2003" CRN, January 3, 2203.