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Upgrade Your Mainframe with Operational Business Intelligence

Companies race to transform their businesses by delivering operational insights to their employees

By Caryn Meyers

Today companies are striving to increase customer loyalty and improve employee productivity in an effort to gain a competitive advantage. To achieve this, many businesses are leveraging near real-time information to enable better business decisions by employees at all levels within the organization. However, many organizations suffer from internal inefficiencies resulting from the lack of integration of work processes that have evolved separately over time. The inability of operational personnel to quickly understand a developing business issue—detecting an inventory problem, identifying fraudulent purchases real-time or identifying preferred customers at every point of contact—all result from a lack of the right information at the right time, to the right business user in the organization. From call centers to production managers, proactively delivering information as it's needed can improve business users' decisions throughout a corporation, increasing its overall efficiency.

To satisfy this need for information, business intelligence (BI) solutions are evolving to become more proactive, delivering actionable information to the front lines of business operations. This is best achieved by embedding information into the operational processes that drive the business, without forcing business users to learn yet another application or another set of processes. This strategy is being referred to as operational BI.

Operational Business Intelligence Tools

This shift in the use of business information is changing the way BI is being delivered. BI systems are no longer limited to departmental solutions accessed by analysts that cull through data reporting on business trends. While these systems will always provide critical insights into a company's success in achieving its overall goals, BI solutions are evolving to deliver critical information to the people that transact and manage the business on a daily basis. This is achieved by leveraging application tools that can automate the delivery of key information to the masses, delivering data integrated in the desktops they interface with daily. There are many of these mainframe-enabled tools including DataQuant, Alphablox, IBI-WebFocus and SAS Enterprise Business Intelligence DB2* for z/OS* servers as one of the primary underlying databases.

Each of these solutions provides a slightly different approach to integrating BI into a System z* environment. Both IBI's WebFocus and SAS Enterprise Business Intelligence solutions offer a wide spectrum of data-warehousing functions from built-in access, transformation and integration tools for a variety of data sources to reporting and visualization tools that present the data to end users. These products are suitable for those who wish to integrate many data sources or need to transform their data sources, delivering information to the visualization components that provide business users with the actionable information.

DataQuant delivers a powerful graphical reporting environment that allows organizations to quickly and easily develop decision-making applications with their interactive visualization solutions. Alphablox provides an excellent option for Web-based integration leveraging a WebSphere* portal to embed visualization results into operational processes. These fit well in organizations that already have their data cleansed and prepared for reporting and/or don't have strong requirements to access many data sources. Data access and cleansing functions can be added to these options with separate IBM* products such as Information Server for accessibility to information and DataStage for data management.

Information for the Masses

While all BI solutions have the benefit of providing actionable information to a company, each has unique characteristics and performance requirements. Analytical BI systems are shared by relatively small numbers of users accessing data volumes to derive trending patterns. This information is delivered through standardized reports, dashboards and performance systems.

Operational BI solutions access far less data in a given inquiry; however, the ad-hoc information must be provided at transaction speeds embedded into the desktop for large volumes of users. To satisfy these requirements, operational BI systems place completely different requirements on the underlying systems that deliver these solutions.

Enabling BI for operational personnel means opening the system to potentially tens of thousands of users who are accustomed to structured application interfaces. IT implementers must rethink how BI is delivered to these business users. For most IT teams, it means integrating an enterprise decision support environment with the transactional environment of the company, both capable of supporting large groups of users accessing systems 24-7. This requirement dramatically alters the system characteristics for a BI environment.

Operational BI workloads also require a foundation with wide-reaching data accessibility. While this may sound difficult to achieve, SAS, IBI and now IBM provide the functionality to address data accessibility. Leveraging the latest technologies found in their offerings greatly simplifies this task. A key component found in Information Server for System z is Federation Server, which consolidates data into a single view. This gives users access to information dispersed throughout the enterprise, both on the mainframe as well as distributed platforms, making the vision of operational BI a reality.

Query Performance at Transaction Speeds

When queries for operational BI solutions are embedded into time-sensitive operational systems, they must respond at transaction speeds. Ensuring system resources are efficiently leveraged to deliver the required response time requires a sophisticated workload manager. An operational BI system must be able to prioritize work based on how critical it is while also providing the necessary resources to meet response time requirements.

Due to its multi-workload heritage, the mainframe environment has evolved to allocate all resources based on business priority rather than just the order in which work is received. This capability prevents large workloads from monopolizing system resources, ensuring that important queries generated from real-time operational BI solutions, are completed with fast and consistent response times.,

The sophisticated workload-management capability in this platform was designed to accommodate the integration of many workloads on the same server to maximize the utilization of installed capacity within the environment. As one workload's processing demands diminish, the capacity is automatically available to other work in the system, thereby avoiding islands of unused processing cycles that often result when applications are distributed on discrete servers. More information on workloads can be found online (www.ibmsystemsmag.com/mainframe/januaryfebruary/04/administrator/10079p1.aspx).

To improve the processing and cost implications of deploying a DB2 technology-based BI workload on the mainframe, a specialty processor called the System z Integrated Information Processor (zIIP) can be installed. This processor allows data-intensive workloads, such as those associated with data warehousing or BI, to be hosted on the System z platform at a greatly reduced cost. The System z server will re-direct processing from general-purpose engines to the specialty engine for completion. zIIP is well-suited to handle parallel queries (with an emphasis on star schema designs) common in BI workloads and can improve the overall price/performance of parallel processing on the System z platform with no negative impact on the end-user response times. More information is available online (www.ibmsystemsmag.com/mainframe/enewsletterexclusive/18822p1.aspx).

Continuous Availability and Scalability

As businesses become more globally dispersed, access to operational systems is critical, with many companies requiring 24-7 operations. Successfully integrating BI into an operational environment demands similar accessibility. Key to this access is the availability of the database that delivers the information. To support a true operational environment, users require a database with the highest levels of availability and recovery. DB2 for z/OS offers some key capabilities designed to ensure the flow of information to end users.

These include the capabilities to continue to process queries during backup procedures and to share data with multiple logical and physical systems that can be at different physical locations. With the recent processing and memory enhancements delivered with the System z10 Enterprise Server, systems can effortlessly scale to meet demand as processors and memory are seamlessly added to an online environment. Gone are the days of taking an application down to upgrade and reconfigure the underlying system and its data. With a mainframe environment, a workload is capable of spanning a series of systems when configured in a data-sharing environment, offering the maximum flexibility in managing and delivering operational workloads in a 24-7 environment.

System Security

As businesses rely more heavily on BI solutions to drive operations, controlling access to the information grows more critical. Web-enabling information is a potentially dangerous way to expose the most critical business asset of your company—the data—to intrusions by external and internal threats. With the press filled with the latest failures, a secure server that can protect sensitive corporate information from unauthorized access is paramount to ensure business survival.

The security-rich holistic design of the IBM mainframe can help protect the BI solution against data breaches. Originally designed to be shared by thousands of users, the IBM mainframe has security built into nearly every level of the computer, from the processor level, to the OS and application level. This design helps protect the System z platform from malware, viruses and threats from insiders. The integration of intrusion-detection services, secure communication protocols and digital-certificate user authentication within z/OS helps to ensure the security of BI applications conducted in a Web-enabled environment. System z security features can help you protect sensitive data and meet regulatory reporting needs with confidence. These include encryption solutions to help secure data from theft or compromise, access control management and extensive auditing features with the simplicity of centralized management. System z security is one of the many reasons why the world's top banks and retailers rely on the IBM mainframe to help secure sensitive business transactions.

Protect Sensitive Data

Sensitive data used in BI applications can also be protected with the many different encryption solutions available on the System z. These include encryption of data as it leaves the datacenter either over the Internet or on tape and encryption within the database itself. These encryption solutions are built on the robust System z encryption infrastructure, which includes encryption-key management and protection and encryption acceleration. IBM builds encryption acceleration into every engine on the System z server. This provides high performance for encryption and hashing algorithms. Requests are transparent to the application, and each new generation of the System z server provides faster acceleration. The optional Crypto Express2 feature provides added encryption protection. This tamper-resistant module ensures that your private encryption keys and sensitive credit-card validation data are never in the clear.

The Advantages of the Mainframe

The pervasiveness of operational BI clearly impacts the architects and technologies used to support these environments, and the mainframe environment offers many advantages for delivering these solutions. Ensuring you have the capability to seamlessly upgrade a production system without enduring planned outages has never been more critical. Securing your data from external and internal threats is a critical component for any production system. Leveraging a mainframe's self-managing, system workload control and overall cost efficiencies can significantly improve business value.

With the mainframe's scalability, security, workload-management capabilities and the wide choice of BI and integration tools now available, users have the capability to seamlessly create an operational BI solution that will meet company requirements for today's 24-7 economy.

Caryn Meyers is part of the IBM marketing organization in support of System z solutions in the BI and data serving area. She focuses on assisting teams with the design and delivery of scalable data warehouse solutions.