IBM

Evolving to insight with business intelligence

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Reaping the rewards of IBM integrated information management

Businesses today are learning that many of their challenges can be solved through the effective use of their information assets. When companies are seeking ways to add value to their existing investments, they frequently turn to the information they have gathered in hopes of finding the roadmaps to higher revenues and more powerful business strategies.

In today's on demand world, being able to distribute the right information to the employees who are charged with making critical business decisions bestows a potent competitive advantage to your company. Creating business value by integrating, analyzing and optimizing heterogeneous types and sources of information throughout its lifecycle to manage risk and create new business insight is what IBM calls information on demand. However, the key to acquiring this capability requires the ability to gather and manage your company's information intake, and integrate it with your content management and business intelligence solutions. These enable you to respond to customers, business partners and employees with information that leads to better decision making, higher sales and enhanced customer loyalty.

Business intelligence (BI) applications, for instance, such as data mining and online analytical processing (OLAP), have long been recognized for the critical role they play in making better business decisions. However, such applications do not exist in a vacuum. Information analysis can only be as successful as the accuracy and timeliness of the information fed into BI applications. How effective are your data warehouse, information integration and underlying information management solutions that deliver the information to be analyzed? Are business managers confident that their data provides them with a single version of the truth across all operational areas? Do they receive consistent results from queries no matter how they are phrased?

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The IBM information infrastructure takes advantage of all a company's information stores and unites them into a virtual whole through the ability to make federated searches. This gives users a single view of all the information and content in the environment—and a way to sort through and find the documents and information they need. It is this wide range of information that data warehousing and BI structures can organize, monitor and study. IBM is the only company in the IT industry able to provide all parts of the information infrastructure, which includes data warehouse, information integration, business intelligence and content management solutions.

Industry's widest scope of BI software
Supported by the IBM integrated information infrastructure, the IBM business intelligence portfolio provides the industry's broadest and most visionary software platform to help organizations leverage their investment in information technologies. It also integrates with one of the industry's most comprehensive sets of software solutions for building the integrated information infrastructure that makes BI initiatives more successful. Within this integrated framework, IBM business intelligence solutions offer a wide range of capabilities, such as data mining and embedded analytics, which deliver insight within the user's business applications at the point of maximum opportunity. IBM provides not only the data stores that form the foundation of the information infrastructure, it also provides the data warehouse and analytical tools that integrate with industry-leading portal environments and packaged applications, application development environments, messaging-oriented middleware, service oriented architectures (SOAs) and business process software.

With the growth of unstructured data stores such as IBM DB2 Content Manager and IBM's corresponding products for unstructured data such as IBM WebSphere® Information Integrator Content Edition, IBM has put into place the technology to extend BI techniques to unstructured data, such as document repositories, e-mail archives and Web sites. For instance, it is now possible to read the meta data from document images that are presented to the customer in check presentment solutions and determine which customers—with their names and e-mail addresses—are using such value-added features. This provides the groundwork for further marketing and sales efforts.

This white paper will discuss the value of the IBM BI portfolio as a key component of the IBM information infrastructure. It presents an overview of the IBM DB2® Data Warehouse Edition (IBM DWE), which provides a rich set of BI tools in the context of a scalable and high-performance database: IBM DB2 Universal Database™ Enterprise Server Edition. Based on the full functionality of DB2 Universal Database Enterprise Server Edition, IBM DWE provides an integrated solution for data warehouse deployment and BI analysis.

IBM DB2 Data Warehouse Edition—based on a solid foundation

IBM has chosen to base its strategic BI database on its most powerful relational database system—DB2 Universal Database. This core database forms the foundation of the DB2 DWE. Thus DWE buyers are assured of building business intelligence applications on the most capable and versatile database engine ever offered.

The most recent versions of DB2 Universal Database Enterprise Server Edition, Versions 8.x, unite into a single system all BI and online transaction processing (OLTP) features that had previously resided in different versions of DB2 in Version 7 (Enterprise Edition and Enterprise-Extended Edition), including:

- Scalability—A company may want to create reports comparing historical data with active data coming into the data warehouse. Storing all this data may require scaling out the database onto additional processors. The IBM database can scale easily to hundreds of processors, and the database partitioning feature (DPF) takes advantage of this built-in scalability. The DPF enables database administrators (DBAs) to partition the data and work in parallel on the separate partitions.

- Fast query results—In the process of collecting and analyzing information to determine trends, power users frequently create queries, multidimensional data cubes and reports while working with front-end BI tools from IBM Business Partners such as Cognos, Business Objects and MicroStrategy. To optimally support these applications it is best to use a specialized database infrastructure that enables the creation of tables that more closely match the data organization that these applications need. Materialized query tables (MQTs) are a critical feature of DB2 that provide optimal performance for these third-party BI tools.

  For instance, much of the analysis and reporting performed by BI organizations concern marketing data organized by products, customer names, reporting period, sales person, territory and sales results. To look for these six parameters, users create an MQT with these factors identified and the query runs against the MQT, speeding up the performance of the query substantially.

- Better performance automatically—Autonomic features in DB2 automatically optimize the performance of the database for responding to BI queries while freeing DBA time and lowering the total cost of ownership of the database. The Design Advisor and Configuration Advisor enable DBAs to tune the database for maximum performance. In one documented test, the Design Advisor was able to increase the performance of an untuned DB2 UDB database by 84 percent.

IBM DB2 Data Warehouse Edition—special BI features

Not only is DB2 DWE built on the foundation of the powerful, proven database, DB2 Universal Database Enterprise Server Edition, it also includes a number of features which are designed specifically to support the mission and workload of clients who are deploying warehouses and supporting powerful BI tools and custom analytic applications. Among these features are:

- *IBM DB2 Query Patroller*—With terabytes and petabytes of data in the data warehouse, complex queries can slow down performance for all users. But with IBM DB2 Query Patroller in the data warehouse, users can increase the speed of querying and perform more queries in a given time frame. The DB2 Query Patroller allows DBAs to automatically manage, monitor and control all aspects of query submission so hundreds of users can securely submit concurrent queries. The solution prioritizes and schedules queries to render query completion more predictable and efficiently spread computing resources across all database partitions. The DB2 Query Patroller feature provides historical analysis to determine who is running queries and what data is being queried so you can optimally tune the environment and put in place chargeback systems for equitable apportioning of the cost of the data warehouse operation. Monitoring allows administrators and users to find out the status of their queries. The predictive control mechanism of DB2 Query Patroller allows you to set thresholds and determine at what level queries need to be rescheduled for processing or even cancelled and resubmitted in a different form. Querying can tie up expensive resources in your data warehouse environment, but with the DB2 Query Patroller, you can control the input and respond to users with prompt, predictable results.

- *OLAP acceleration feature*—BI analysts and business managers are frequent and heavy users of OLAP queries to "slice and dice" business results by showing the relationships among fields. IBM DB2 Cube Views, the OLAP acceleration feature of the DB2 Data Warehouse Edition, provides for the meta data exchange between the database and the OLAP tool, enabling cubes to be hosted in the database. By modeling once and using everywhere, architects can provide OLAP solutions that can be deployed faster and are easier to manage. This feature can improve performance across the spectrum of analytical applications regardless of the particular OLAP tools and technologies used.
- *Data mining*—While OLAP analysis helps you obtain the answer to directed queries for example, "how many products of a certain type is each salesperson in a region selling?"—data mining using IBM DB2 Intelligent Miner™ products shows patterns and similarities within your customer base that you didn't previously know existed. For example, a large cell phone company wants to know how it can leverage information about its customers' behavior to serve them better or sell more to them. Data mining reveals that one group of customers doesn't use the calling feature much but does use text messaging a lot. Another group is always roaming and yet another group roams and uses text messaging. With this information, the company can more effectively cross-sell and up-sell its customer base and develop better customer service initiatives.

One of the unique features that IBM provides with its data mining functionality is the ability to distribute this powerful mining technology throughout the organization and embed it in other applications, for instance, customer relationship management (CRM) applications. By discovering through data mining that a certain group of customers buys camping equipment but not sports gear, a call center representative can offer additional products for camping on sale, or with a special discount, and sell more products to a customer at the point of sale. Similar data mining applications help you detect fraud, again by determining subgroups within your customer base—for instance, customers that have multiple account names—that are distinct from other groups.

Another real-time use of data mining enables automobile manufacturers to pinpoint which suppliers are responsible for selling parts that have high failure rates. This information changes on an ongoing basis, and the auto maker is able to anticipate problems by determining what is causing the failure rate, changing or working with suppliers, or following up on vehicles sold before problems arise.

You don't have to be a data mining expert—or purchase separate data mining applications—to discover gold in your data. IBM provides this functionality with its DB2 Data Warehouse Edition.

Moving data and ensuring its quality

One of IBM's capabilities that help you perform successful BI reporting and analysis functions is data movement. Data must be moved into the data warehouse from underlying data repositories to provide analysts with a single, scalable, high-performance repository to direct their queries against. In the process of moving data, DBAs must make sure that new data conforms with the structure of data in the data warehouse, and they must perform data cleansing, duplicate elimination and data transformation (for example, from multiple time/date formats to a single common one). IBM WebSphere Data Integration Suite provides the following capabilities, helping to meet the demand for an open, flexible infrastructure that delivers accurate, timely and coherent information:

- Performing data profiling.
- Ensuring data quality.
- Preparing and transforming data.
- Moving data from disparate data sources to the data warehouse.

Designed for high-volume, high-velocity corporate data environments, IBM's data integration capabilities deliver unmatched functionality, performance and scalability for the richest set of information integration capabilities in the marketplace.

Making insights visible to those who need them

Even with top-notch analytics using OLAP or data mining, it's no certainty that vital business insights—those that clearly spell out what the organization needs to do to succeed—will reach the managers who are the most logical choices to carry out business strategies. Enter IBM DB2 Alphablox®, IBM's embedded analytics solution, which enables you to build customized, broadly deployed profitability management solutions by providing employees with the information they need and actually prescribing courses of action.

Alphablox works with whatever data models you have and functions as a distributed, real-time information source within your employee's working environment, whether that is a portal or a front end provided by an IBM Business Partner. With this functionality, you organize the data to give you the information you want, say "sales figures in the West," and this feature connects with the data and allows it to interact with a browser, highlighted in red and flagged for action. Alphablox not only displays the numbers on the regional sales manager's screen, it also highlights a separate list of options for action, as determined by OLAP or data mining analytics.

Business results can change dramatically when you provide real-time analytics to the employees who have the most influence upon revenues. Whether you are a retailer and need to put this solution in the hands of your buyers, or you are a bank manager and need to empower your branch managers with more decision-making capability, IBM inline analytics can have a significant impact on your business.

Distributing information on demand

Spreadsheets provide an intuitive and powerful front end to represent and manipulate business information. Microsoft Excel is the de facto tool for spreadsheets. The main problem with Excel is its inability to seamlessly transfer information between the spreadsheet and relational databases like DB2 or IBM Informix®. Often users have to write complex macros to do this. This process is defect-prone, expensive, difficult to maintain and frequently beyond the skill set of the regular Excel power user. IBM's spreadsheet connectivity feature enables Excel users to overcome this limitation by providing a simple GUI-based patented process that seamlessly transfers information from an Excel spreadsheet to multiple databases. This capability transforms a normally static Excel spreadsheet into a dynamic e-business application by providing enterprise users with secure and authenticated database reporting and update capabilities, in an Internet/intranet and client server environment.

Working with IBM DB2 DWE: IBM DB2 entity analytics solution

IBM also provides BI solutions that work with the functionality of IBM DB2 Data Warehouse. For instance, IBM DB2 entity analytics solutions are a new suite of products from IBM that can be easily integrated with DB2 Data Warehouse Edition, helping to limit your liabilities by providing you with the benefit of knowing who is on the other side of your company's transactions.

These real-time identity solutions protect you by determining the true identity of a customer even if the customer is using multiple accounts with different attributes. This powerful feature also reveals customer relationships to other individuals—for instance, from publicly available criminal watch lists— to uncover social, professional, value or criminal networks. Companies with large exposures to the risk of criminal or fraudulent activity need to carefully evaluate the benefits to be gained by DB2 entity analytic solutions.

In this age of regulated corporate responsibility, widespread fraud and suspected threats of terrorism, organizations cannot afford to do business anonymously. With information on demand, IBM DB2 entity analytic solutions can alert you to unsavory and undesirable individuals before you approve their accounts and take on the liability of doing business with them.

IBM provides expertise and support

High-performing, flexible and cost-effective IBM business intelligence solutions provide you with access to IBM's worldwide network of 2,000 consultants and 250 Business Partners for expertise and support. IBM DB2 Data Warehouse Edition and the innovative portfolio of BI products that accompany it can help you make decisions that put your organization on the path towards higher profits, more loyal customers and a more efficient staff.

IBM business intelligence solutions are built on open standards, ready to be integrated with your enterprise solutions such as customer relationship management and sales force management applications for dramatically more effective results. Working together with the components of the IBM information infrastructure, IBM business intelligence solutions can help you realize unprecedented value from your existing investments in data and software.

For more information

To find out more about IBM business intelligence and IBM Information On Demand solutions, contact your IBM representative or IBM Business Partner or visit **ibm.com**/software/data/db2bi

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