A broad information reach:
The gateway to information
management

Cognos.
software

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Abstract

For businesses implementing enterprise-scale Performance Management applications, a broad information reach with open data access is not just a nice-to-have. Delivering the right information to the right users at the right time — in a format that is usable and fosters high productivity — demands broad access to the right data. The IBM Cognos® 8 platform delivers this broad information reach, with tools to easily maintain and revise the corporate view as new data sources and business needs emerge.

Overview

Data can be your organization's greatest asset. Whether it comes from day-to-day operations, Enterprise Resource Planning (ERP) systems, data warehouses, operational data stores, or other sources, it is the key to understanding and managing your performance. Used effectively, it tells you what you must do to succeed, how you are doing relative to plan, and why.

But reaping the benefits of data isn't easy. Data is typically fragmented, often incomplete, and not readily available in a form that can be used effectively by the people who need it for decision making. To realize the benefits of data, and empower business users, IT must be able to access data from all sources, no matter where it resides. Only then can they deliver information in terms that business users understand and can trust.

Business problems

Data, data everywhere…

Effective performance management is only possible when people throughout the enterprise have the information they need to make the better business decisions that enable them to meet operational goals. To be effective, this information must not only be timely and accurate, it must present a single, consistent, enterprise-wide view of reality across departments, divisions, and corporate functions.

To provide this information, organizations must convert vast amounts of data from day-to-day operations, enterprise resource planning (ERP) systems, data warehouses, operational data stores, and other sources into a usable form. Faced with an increasing number of data sources, exponential growth in data volume, data integration issues following mergers and acquisitions, compliance regulations, and the need to combine historical and real-time data for operational intelligence, the task of converting data to usable information can be daunting.

Business drivers

To meet the needs of all users, and to overcome issues associated with integrating data for use with a variety of tools, it is often necessary to stage data in multiple places. As a result, the data is in silos that are hard to get at and that store data in a variety of different formats that business can't readily use.

Breaking down the silos
One result of these silos is the proliferation of disconnected data marts. As companies have adopted business intelligence, data marts have increased dramatically in number and grown in size and complexity. Dedicated resources are needed to manage them on an ongoing basis, resulting in higher costs for IT.

Using point solutions or home grown programs to gain access to information to address different user needs is not sustainable. For example, point solutions to access ERP data, one-off dashboards, or Microsoft® Excel®-based products all add their own layers of query and reporting products that result in introducing significant reconciliation challenges. They also present usability challenges for people simply trying to get the information they need, and they increase complexity for IT.

To overcome these challenges, organizations must be able to get at their data reliably, they must be able to choose the best methods to source it, and they must have the flexibility needed to change approaches as their business demands change.

The key to realizing the potential of your data is to implement a solution that is built for open data access, ensuring a broad information reach. This paper explains why this is the essential starting point for accessing, integrating, and organizing data to create a single business view of your enterprise that you can use to drive better performance.

The new face of data

Increasingly, organizations are required to access data from more and more sources. Modern sources like Web services and XML are increasingly being adopted as systems move to the Web. Other sources, such as WSDL, LDAP, and JDBC™ mean that, more than ever, organizations need a way to bring disparate, heterogeneous data sources together for effective BI.

Creating a common view

With multiple silos of data, multiple tools to access the data, and more kinds of data than ever before, the problems associated with making sense of it all are greater than ever. The solution to these problems lies with common metadata that uses all of the data, no matter what its source, to provide a single business view that all users, in all roles across the organization, can use to manage the business.

"According to Gartner, 80 percent or more of the cost for a data warehouse implementation is tied up in data acquisition, integration, and cleansing operations."

—Donald Feinberg, Organizing and Managing Data for Strategic BI, Gartner BI Summit 2005

Data from any source

Data comes from everywhere. It is generated when an order is placed or a delivery made. It is created when an employee is hired or trained, when a prospective customer views a Web site, and when any of a wide range of other business activities occurs.

Typically, the sources of data span multiple systems, platforms, and underlying technologies. Many of these have evolved over time, often without rigorous central management. Business constraints have made it difficult or impossible to rationalize these into a single, cohesive data source. The time and money invested in these systems means it is seldom practical or cost effective to migrate the accumulated data into a single environment. An enterprise strategy for managing data must allow access to data no matter what its source.

Typical enterprise data sources include various combinations of

- Relational databases, including Oracle, SQL, IBM, Teradata, Sybase, and ODBC, as well as dimensionally aware sources like SAP BW.

- Widely deployed ERP systems, including SAP, PeopleSoft, and Siebel.

- Enterprise data warehouses and marts, with both 3NF and star schemas.

- Widely used OLAP sources, including IBM Cognos PowerCube, Microsoft SQL Server® Analysis Services, IBM DB2® OLAP Server, and Oracle Essbase.

- Modern data sources, such as XML, JDBC, LDAP and WSDL.

- Planning and budgeting data.

- "Satellite" data sources, including Microsoft Excel files, Microsoft Access® files, flat files, and more.

- Mainframe sources, including VSAM, IMS, IDMS, COBOL copybooks, and others.

- Content management data, including IBM FileNet®, EMC Documentum, OpenSoft, and others.

The solution

Complete access to all the data, wherever it resides

Overcoming the barriers to data access and ensuring a broad data reach is the top priority for many organizations, and IBM Cognos solutions recognize this priority. Through our experience with thousands of enterprise customers, we know that access to data is more than the simple ability to connect a reporting or analysis tool to a given data source. The magic lies in delivering access to data in the context of value, both from an information and business intelligence point of view, and from the perspective of cost of duplication or data migration.

To address the issues associated with integrating data for BI, IBM Cognos solutions are built to provide the right mix of sourcing strategies to enable organizations to leverage their existing and new investments in capturing data assets and in adopting data integration strategies. Flexible data sourcing includes direct data access; extract, transform and load (ETL); and enterprise information integration (EII).

On top of this, the IBM Cognos user interface provides a consistent way to promote rapid adoption by users across the enterprise, not just within IT. The result is an effective enterprise BI platform that:

- Makes it easier for day-to-day users to do their jobs, by delivering information they can use in the context in which they need it.

- Delivers trusted information, based on all of the underlying data needed to make clear decisions.

- Delivers information in a way that does not require in-depth training or high maintenance costs and is independent of the underlying data source.

The IBM Cognos 8 platform delivers open data access -providing complete access to all data. This enables the users to gain access to information from all sources of data within the organization; letting users source any combination of data through a single point of access from multiple systems, platforms and technologies.

- You can maximize your investment in relational sources including: IBM DB2, Oracle, Sybase, Microsoft SQL Server, with native access to all major databases, and support for database specific features and functionality, plus ODBC access to many more sources.

- OLAP sources such as IBM Cognos PowerCube, IBM Cubing Services, SAP BW, and Microsoft SQL Server Analysis Services are accessible without the need to re-engineer or duplicate metadata, allowing you to automatically leverage the OLAP hierarchical information. This ensures that you can leverage your existing investment in OLAP technologies, whilst providing a broader consumption of critical business information .

- IBM Cognos TM1 and IBM Cognos Now! sources are now accessible to the IBM Cognos 8 platform and open to all capabilities. This allows a more complete view of the business to be delivered to consumers; as well as the full range of reporting and analysis for IBM Cognos TM1 and IBM Cognos Now!

- Applications such as SAP R/3, Siebel, and SalesForce.com become easily accessible with the complex ERP data sources being presented in common business terms that are easily understood by the user. By harnessing the packaged pre-built views IT can jump start deployments and reduce the time the time to deliver application data combined with other business data.

- Open data access includes the ability to access many modern and legacy sources through a relational interface allowing SQL to be written against these sources. These include XML, Web Services data, and LDAP. In addition, many legacy sources can be accessed through Java™ JDBC access.

- The single query services in the IBM Cognos 8 platform is utilized to access all data sources which ensures that consistent and predictable queries are generated against all data sources regardless of the format; at the same time leveraging the unique features of individual sources. By harnessing the single query engine, the management and maintenance burden on IT is reduced, and as more user capabilities are added, users can simply leverage the same query service.

With open data access it is possible to leverage existing data with minimal impact on existing systems. Organizations in the process of re-architecting their approach to data access as part of an overall performance management initiative can access both existing and new systems, to take a phased-in approach to integrating data. What's more, they gain fast access to data sources, and can easily move, transform, or replicate data when it makes sense.

Direct access

Some organizations already have all of the data assets they need. To deliver high-value BI to end users, they must provide the business with a simple point of access to the data. IBM Cognos solutions provide consistent access to all data sources and common metadata through a universal data access layer and a single query service within the IBM Cognos 8 platform.

Extract, Transform, and Load (ETL)

ETL has been around for a long time, and is a well understood technology. It's difficult to find a large enterprise that does not have a data warehouse in place. Getting data from many operational systems is something that happens every day. Data from multiple systems is integrated, cleansed, transformed, and aggregated to deliver a unified historical view that drives analysis.

IBM Cognos' strong partnerships with data integration leaders, such as Informatica, means that organizations with heavy investments in these tools can continue to use them. IBM Cognos software also has great synergies with IBM data integration tools such as IBM WebSphere® Data Integration Suite. This data integration tool offers a comprehensive approach to metadata management. It provides a set of meta-brokers that consistently share and reuse business, technical, and operational metadata across every moving part of an analysis solution, from start to finish. The meta-broker for the IBM Cognos 8 platform is a two-way metadata exchange.

Additionally, the IBM Cognos 8 platform provides a full-featured data integration solution with benefits that include:

• The fastest, easiest, and most cost-effective way to integrate data.

• A powerful transformation engine that facilitates high performance transformations.

• A unique dimensional framework that automates the handling of common data warehousing issues, including slowly changing dimensions, late arriving facts, and surrogate key management, balancing, flattening and recursive hierarchy support with no coding required.

• Unicode support for global deployments.

• The ability to deliver and maintain dimensional warehouses and data marts with conformed dimensions.

• Metadata integration with IBM Cognos 8 platform, for fastest time to deliver any business intelligence capability.

• A complete and easy-to-use BI solution from one business intelligence vendor.

• An end to end production scenario by publishing data movement into IBM Cognos 8 platform.

"Another key benefit of using … Cognos … is the ability to integrate data sources using the ETL tool… This is incredibly useful as it extracts data from a variety of sources, including eMpower and any ERP system, for presentation in a unified, tactical view."

—UTi WorldWide

- The ability to leverage investments in third-party tools—for example, integration with ETL and data integration technologies like IBM Information Server (DataStage), IBM InfoSphere® CDC (Change Data Capture), and other vendors to leverage existing integrate technologies at the organization.

Enterprise Information Integration (EII)

Enterprise information integration lets organizations leverage existing data assets, even in complex data environments, to drive BI standardization. EII technology makes it possible to collect and integrate diverse and distributed data across the enterprise without data latency or migration. The data can include real-time operational data that may not be available in a data warehouse, as well as data from a range of additional sources, such as JDBC, WSDL, LDAP, XML, CSV, and other files. The result is a federated, 360-degree view of data that includes historic data from warehouses and real-time data from relational databases.

As part of ensuring a platform for open data access, the IBM Cognos federation capabilities mean that organizations can get richer reporting by connecting to multiple disparate data sources in batch and real time, supporting the wide range of data strategies deployed today. The IBM Cognos Virtual View Manager ensures fast performance, sophisticated session caching, and a single view of all data sources. Advanced caching options include caching to disk or database, event driven, scheduled, and manual refresh, as well as hybrid memory/disk usage.

In addition, the company has partnered with EII providers to ensure a full range of data access capabilities in IBM Cognos solutions. For example, the company's connection to IBM provides enhanced support for WebSphere Information Integrator. WebSphere II integrates information from DB2 UDB, Informix, Oracle, SQL Server, XML, e-mail, CRM, and Portal applications. It enables users to extend their data integration to mainframes, and to access content repositories, including those from FileNet, Documentum, and DB2 Content Manager.

"Virtual data federation technologies, also called "enterprise information integration" (EII) by some vendors, enable users to integrate data from multiple sources into a single virtual view. The data remains at the source, and the virtual integrated view resides in memory, to be consumed by applications and tools as needed."

–Ted Friedman, Gartner,
Data Integration Technologies,
Support Architecture Delivery,
November 11, 2004

The EII component of the IBM Cognos open data strategy ensures that existing IT resources can be leveraged, and that data from any source can be used to supply the information needed for the reporting and analytics that lead to better business decisions.

IBM Cognos PowerCube and caching for optimal performance

Often data sources, even existing data warehouses, are not structurally optimized to deliver high performance in response to complex or intense queries generated by executing complex reports or in-depth analyses. And sometimes, these data sources do not contain all the information a user would like to combine in the shape and format to perform a particular type of analysis. In these situations, caching is required.

The IBM Cognos 8 platform provides the full range of caching approaches

• IBM Cognos 8 Transformer provides ability to easily construct, build and publish IBM Cognos PowerCube (OLAP data cubes) as caches of data for exploration and analysis by broad communities of business users. These cubes convert high volumes of data into hierarchical-based compact cubes that deliver high perfor- mance and predictable response times. They are accessible by any of the user capabilities including analysis, reporting, mobile, etc.

• Virtual caching to reduce load on source systems and yet provide the flexibility to IT to construct mixed disk, memory and database caching to optimize perfor- mance for user access without reengineering backend data sources

• OLAP caching where queries are stored in server caches and new queries can re-use that cache for fast query response times on frequent queries improving response times without requiring additional physical data storage.

Modeling and delivering the data

Of course, the benefits of a broad information reach are only realized when IT and data modelers can convert all of the data that the organization accumulates into information that makes sense to business people and can be used to make performance-enhancing decisions.

The IBM Cognos 8 platform ensures that organizations reap the rewards of their broad information reach with data modeling and information delivery capabilities that include a common business model for a consistent business view. The IBM Cognos 8 platform delivers the often talked about but rarely delivered single version of the truth needed by business. Modelers tap into all of the data to build a single, multi-lingual model they can use to deliver separate packages of secure information to individuals and groups across the enterprise.

A flexible modeling environment.
The IBM Cognos 8 platform modeling environment insulates business from the complexities underlying data sources, so that they can focus on what data means rather than whether it is accurate. At the same time, IT productivity is maximized with a visual metadata development environment. The IBM Cognos 8 platform includes Model Advisor, a tool to help modelers follow proven modeling practices. Modelers can work separately and combine their results. Models are multi-tiered and feature metadata traceability and bi-directional third party metadata integration, impact analysis, and remapping capabilities, so that models can evolve efficiently with changing business needs.

Conclusion

Business systems generate huge volumes of data driven by factors ranging from compliance, to mergers and acquisitions, to the widespread adoption of high performance ERP systems. The proliferation of data, and the need to access all of it, model it effectively for information consumption, and maintain quality standards, have placed a strain on many organizations trying to deliver enterprise scale BI and performance management solutions that serve the broadest range of user needs.

For businesses implementing enterprise-scale Performance Management applications, a broad information reach with open data access is not just a nice-to-have. The volume and importance of data has made it extremely difficult to deliver the relevant, trustworthy information that business users need without it. Delivering the right information to the right users at the right time, in a format that is usable and fosters high productivity, demands broad access to the right data.

The IBM Cognos 8 platform delivers an information reach that includes the ability to access any data source or combination of data sources, develop common metadata across them for a common business view, and then leverage that view to securely deliver any business intelligence capability to any user. And it provides the tools needed to easily maintain and revise the corporate view as new data sources emerge and as business needs evolve. The result is a platform for effectively managing performance and driving corporate success.

About IBM Cognos BI and Performance Management

IBM Cognos business intelligence (BI) and performance management solutions deliver world-leading enterprise planning, consolidation and BI software, support and services to help companies plan, understand and manage financial and operational performance. IBM Cognos solutions bring together technology, analytical applications, best practices, and a broad network of partners to give customers an open, adaptive and complete performance solution. Over 23,000 customers in more than 135 countries around the world choose IBM Cognos solutions.

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