

Delivering information you can trust

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IBM **Information Management** software

IBM Information Integration Solutions for the Retail Industry

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As the retail industry continues to deal with a fast pace of change, companies face stark new challenges. With “mainstream” social norms and consumption patterns becoming increasingly rare, retailers must delve deeper to understand the wants, needs and purchasing drivers associated with ever more complex customer segments. Retailers cannot compete effectively without understanding who their customers are and what motivates them on each shopping trip. Forward-looking organizations must act now, amid rapidly changing technologies, business processes and market knowledge, to lay the technology foundation to deliver innovations that will lead to advances in customer-centric retailing.

Among the challenges retailers face is the polarization of customer value systems. The strongest growth in market demand is being captured by high-end and low-end providers—to the detriment of those in the middle. On the high end, customers are trading up to “new luxury” providers such as Whole Foods Market and Starbucks, paying premiums for offerings that deliver differentiated value and address their particular wants and needs. On the low end, customers are trading down to “mass value” providers such as Wal-Mart that offer “good enough” value for rock-bottom prices in areas where they perceive no differentiated value.

In addition to the shifts in customer value systems, customer-centric product development is being driven and enabled by a demographic shift. Increasing wealth and disposable income means that consumers have a greater ability to spend on premium products. Flexible global supply chains are making good-quality products widely and cheaply available from sources such as China, Southeast Asia, Latin America and Eastern Europe. As consumers spend less on basic commodities, more of their income becomes available to spend on affordable indulgences and perceived luxury items.

However, it can be difficult for retailers to predict whether a given customer will trade up or down in a particular product category. Because each individual behaves differently depending on whether a particular product category matters to them, retailers must carefully analyze data on consumer demographics and buying patterns to craft effective marketing strategies.

Technology drivers shaping the retail industry

Success in this new customer-centric environment requires that retailers reexamine how well they differentiate from competitors, respond to customer needs and manage operations internally and externally. To help them succeed, retailers need fast, easy and cost-effective access to consumer data, supply chain information and performance indicators for the enterprise. Technologies such as radio frequency identification (RFID), advanced point-of-sale terminals, loyalty cards, smart shelves and digital merchandising have the potential to provide retailers with an unprecedented amount of valuable information to understand and respond to their customers. When the information is managed well, retailers can make better-informed management decisions to satisfy their customers and help the enterprise grow revenue, reduce costs, utilize assets and manage risk.

However, many retailers lack the information management infrastructure that is necessary to process and manage the vast amount of data generated by such systems. They face significant information management challenges because their enterprise systems are often widely distributed, dissimilar and costly to manage.

To extract product and consumer insight from their data, many retail organizations have historically expanded capacity simply by continuing to add servers, applications and information management infrastructure without a strategic plan, which leaves critical information scattered and inconsistent across sales channels. The challenges associated with this kind of ad hoc expansion are amplified in the retail industry as a result of business acquisitions.

Retailers need to extract greater insight from information so they can:

- *Craft distinctive brand propositions*
- *Operationalize customer-centricity and market to the individual*
- *Optimize core processes through the application of systematic intelligence*
- *Harmonize product information with suppliers*
- *Integrate sales channels*
- *Optimize margins and pricing*

To meet these imperatives, retailers need reliable access to timely and accurate information about every facet of their business. However, faced with the intricacies of highly targeted customer-centric marketing, many are realizing that their core IT systems are simply not sufficient to meet their information-gathering needs. Instead, they need systems that can create business value by integrating, optimizing and analyzing heterogeneous types of information assets.

Business challenges create technology challenges

Access to information on demand requires a business and technology environment that can provide highly secure, scalable and reliable remote access across different networks and protocols from various devices. Today, information typically resides in silos scattered throughout the enterprise, which results in:

- *Inconsistent view of customers (internal and external) and data, resulting in no single version of the truth*
- *Locally managed information that may not reflect strategy, business or organizational objectives*
- *Poor channel communication*
- *Expensive to maintain, custom-coded solutions*
- *Poor discipline in how information is requested, presented and used*
- *Lack of an overall strategy or approach related to managing the organization's information*
- *Short-term, "quick fix" solutions becoming long-term systems*

However, this situation is neither inevitable nor irreversible. Virtually all of the information that retailers need already exists somewhere within the organization. The trick is simply to find key data and manage it effectively.

Effective information management: A key competitive advantage

Effective information management is no longer a luxury—it has become fundamental to the success and growth of retail businesses worldwide. More than 60 percent of CEOs and line of business executives say quality information is their top priority for improving business processes, employee productivity and customer satisfaction.¹

Retailers typically have vast stores of data housed in multiple systems across the organization. Nearly 80 percent of organizations have two or more data repositories, and one in four firms has more than 15 data repositories. The average US\$1 billion company operates no fewer than 48 disparate financial systems and 2.7 enterprise resource planning (ERP) systems.² However, because these systems often exist as independent silos, companies can face difficulty in extracting information that is consistent, accurate and timely; for example, according to a February 2006 CDI Institute survey of 50 Global 5000 IT organizations, a full 79 percent of CIOs say there is redundancy in their customer data across the enterprise.³

For this reason, retail organizations that can integrate key systems and manage information effectively have a competitive advantage. By creating a “single view of the truth” across disparate systems, businesses can dramatically streamline customer service, sourcing and manufacturing processes. A 360-degree view of the customer can transform marketing decisions, and real-time information analysis can speed delivery of appropriate products and incentives. By using technology-driven delivery to enhance efficiency, retailers can help reduce costs—and organizations that are skilled at identifying and deploying key technologies have a sustainable competitive edge because they can defend their market share amidst increasing competition.

IBM information integration offers three key capabilities for retailers:

- *Legacy migration helps retailers overcome the challenges associated with moving from legacy applications to packaged solutions*
- *Master information integration allows retailers to organize and cleanse master data around customers, products and suppliers*
- *Retail analytics enables retailers to load vast amounts of clean data into analytical applications for pricing optimization and business intelligence*

These capabilities map across the retail value chain, from the supplier or manufacturer through the distribution process, to selling products in stores to customers and coordinating corporate functions. The capabilities also cover all data types encountered by a retailer, whether they are transactional (such as an EDI purchase order), operational (such as an SAP IDOC) or analytical (such as an online analytical processing or OLAP cube).

IBM helps retailers use information effectively through Information on Demand

Unlike fragile, hard-coded point-to-point integrations, which can inhibit growth and adaptability, an effective information integration and management strategy allows retail organizations to deliver consistent, complete and trustworthy information to support IT projects. IBM offers a unique portfolio of solutions to help overcome the challenges of data integration and enable the delivery of information on demand. The IBM Information on Demand approach enables companies to get the right information to the right people or processes at the right time to address the most critical business issues.

An effective information integration platform offers five fundamental capabilities:

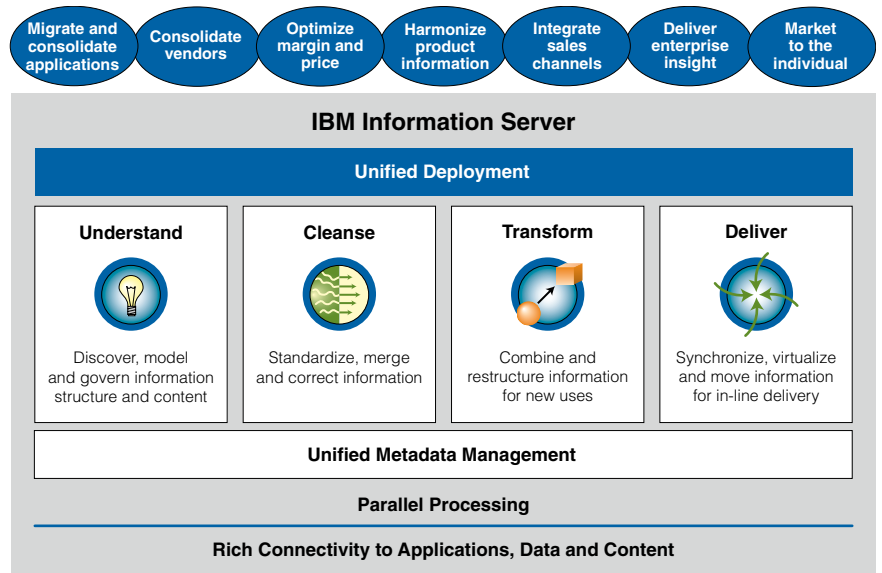
- *To connect to all relevant sources of information, whether structured or unstructured, mainframe or distributed, internal or external*
- *To understand the content, quality and structure of the data sources prior to integration*
- *To standardize and cleanse the data to provide a consistent view of any element of aftermarket product or pricing information*
- *To effectively and efficiently collect, transform and enrich high volumes of data from source to target in a timely manner*
- *To federate information enabling applications to access and integrate diverse data and content as if it were a single source without actually moving or copying the source data*

IBM® Information Server is designed to integrate information across the extended enterprise to support a single, consistent view of the customer, common semantics across the supply chain and an indisputable definition of master data. Delivered when the business user needs it, this information can enrich business processes, enable key contextual insights and inspire confident business decision making (see Figure 1).

The IBM Information Server advantage

- *A comprehensive, unified foundation for enterprise information architectures, scalable to any volume and processing requirement*
- *Auditable data quality as a foundation for trusted information across the enterprise*
- *Metadata-driven integration, providing breakthrough productivity and flexibility for integrating and enriching information*
- *Consistent, reusable information services—along with application services and process services*
- *Accelerated time to value with proven, industry-aligned solutions and expertise*
- *Broadest and deepest connectivity to information across diverse sources: structured, unstructured, mainframe and applications*
- *Proven to manage high transaction volume point of sale (POS) data transformations to business intelligence and optimization systems*
- *Proven to integrate with mainframe and packaged retail applications, including SAP Retail, JDA Software and Retek*
- *Used by 10 of the world's 20 largest retailers*
- *Embedded in the IBM Retail Business Intelligence data warehousing solution*

Figure 1: The IBM Information Server platform



Find and understand key data

IBM Information Server is designed to provide access to a broad range of information sources, a wide range of integration functionality and outstanding flexibility for Service Oriented Architecture (SOA), event-driven processing, scheduled batch processing and standard application programming interfaces (APIs) such as SQL and Java™.

Underlying these functions is a common metadata and parallel processing infrastructure that provides leverage and automation across the platform. Each product in the portfolio also provides connections to many data and content sources, and the ability to deliver information through a variety of mechanisms. By using SOA to publish consistent, reusable services for information, retailers can make it easier for processes to get the information they need from across a heterogeneous IT environment.

Traditional siloed environments can make it very difficult for retailers to answer even very simple questions, such as where customer information resides and whether that information is correct. To help retailers understand the information already stored within their systems, IBM Information Server takes a three-pronged approach to metadata:

- 1. Through data-centric profiling and analysis of source systems, **IBM WebSphere® Information Analyzer**, a product module within IBM Information Server, helps automate detailed profiling of the data in each column. By providing insight into the quality and usage characteristics of the information, WebSphere Information Analyzer can help uncover data relationships across systems through foreign key affinity mapping. This type of profiling is designed to become an ongoing process, allowing the company to understand how data quality changes over time.*

As part of this profiling process, a metadata map of source systems is created to reflect the actual data content and relationships. This metadata map is kept in the metadata repository within IBM Information Server, providing a baseline for current and future products. It can also help reduce development time dramatically by enabling developers to find relevant data stores quickly.

- 2. Business metadata is recorded in a product module called **IBM WebSphere Business Glossary**. WebSphere Business Glossary provides a Web-based tool for authoring, managing and sharing business metadata. This tool is designed for business users and subject-matter experts to define data stewards and record business terminology definitions and taxonomies.*

For example, multiple systems may maintain tables of customer information. However, the business may uncover a requirement for the concept of “high-value” customers. The business needs a way to define high-value customers and how to recognize them. WebSphere Business Glossary provides a tool for recording these definitions and relating business concepts together into taxonomies. In this manner, the tool records the business requirements in the same metadata foundation that the profiling and analysis process uses.

- 3. When database administrators and data architects perform physical data modeling, they are actually defining the future state of the data. **IBM Rational® Data Architect** feeds this metadata into a shared repository. This tool not only provides strong logical and physical data modeling capabilities, but also provides facilities to map across models and automatically discover relationships.*

Because employees in multiple roles are typically involved in development projects, an IBM Information Server module called IBM WebSphere Metadata Server automates management of metadata across these roles and functions. As each role creates new metadata, that metadata is immediately available to others working on the project—helping to dramatically reduce the time between specification and build and also shorten overall project cycle times. The metadata can be used to shorten the time it takes to design integration logic, and sometimes even to automate the creation of code. It creates an ongoing record of shared understanding that carries forward to future projects. The metadata itself becomes an asset that improves the overall understanding of the business and allows projects to be executed more efficiently in the future.

Leading specialty jewelry retailer

Challenge: Increased competition from mega-retailers in the jewelry market was lowering retail transaction counts and threatening profits. To combat these competitors, the specialty retailer needed to build customer loyalty and offer better service.

Solution: IBM WebSphere DataStage and IBM WebSphere QualityStage, deployed in an SOA help synchronize central and store-level customer data warehouses. Synchronized information allows each of the company's sales associates to proactively service and sell with thank you notes, service reminders and birthday offers.

Benefits: Improved customer service is estimated to generate US\$36–\$60 million per year in new sales.

Standardize and cleanse data for consistent information

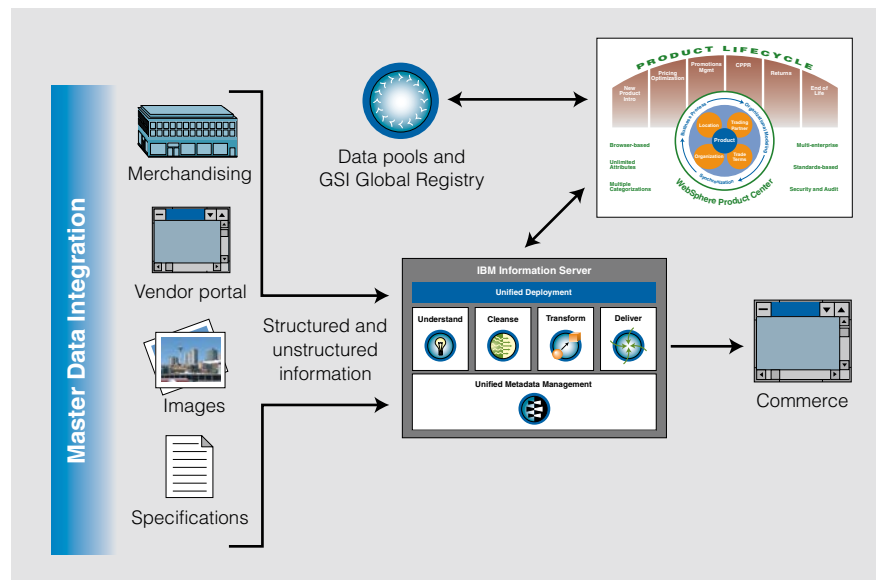
Once retail organizations identify and map sources of critical data throughout the enterprise, they must evaluate the quality of that data. Slow, continuous degradation can cause data to become outdated or inconsistent, and therefore no longer trustworthy.

Data cleansing is the process of repairing this inevitable degradation. Within IBM Information Server, the IBM WebSphere QualityStage™ product module helps to identify and resolve data quality issues through an easy-to-use graphical flow diagram. This module allows data quality processes to be embedded in any information integration process. With WebSphere QualityStage, retailers can:

- *Perform free-form text investigation, allowing administrators to recognize and parse out individual fields of data from free-form text*
- *Standardize and correct individual data fields according to company-wide standards*
- *Use postal information to standardize, validate and enrich address data*
- *Remove duplicate data from individual sources through matching processes to create a single view*
- *Identify and link common records across sources*
- *Merge the best data from across different systems into a consolidated record (see Figure 2)*
- *Define complex matching and survivorship logic using visual tools*
- *Enable a single version of the truth*

The true power of WebSphere QualityStage is its ability to match data from different records, even when the data appears very different. These match rules are designed with a user-friendly visual interface, providing instant feedback on match rule changes to allow the rules to be fine-tuned quickly and easily. Because of this ability to match records, WebSphere QualityStage is a key enabler of creating a single view of customers or products.

Figure 2: Integrating data from multiple sources



Quickly transform and enrich high volumes of data

By allowing retail organizations to transform and aggregate any volume of information in batch or real time through visually designed logic, IBM WebSphere DataStage® facilitates codeless visual design of data flows with hundreds of built-in transformation functions. It helps optimize the reuse of data integration objects, allowing administrators to leverage parallel processing without requiring design changes. It is also capable of supporting batch and real-time operations.

Gap, Inc.

Challenge: Inconsistent and untimely financial information caused by proliferation of legacy systems

Solution: Migrated multiple financial systems to a single instance and re-used WebSphere DataStage to support data warehouse and optimization solution

Benefits: Reduced the time to transition from legacy systems by 90 percent over traditional methods, saving US\$2 million and achieving payback in less than six months

Federate information for seamless business intelligence

Once data has been identified and cleansed, IBM WebSphere Federation Server enables companies to access and integrate heterogeneous information across multiple sources as if they were a single source. Visual tools for federated data discovery and data modeling make it easy for retailers to extend the value of existing analytical applications by providing real-time access to integrated information.

IBM offers a complete range of Information on Demand solutions for the retail industry

As the challenges of a global business environment push retailers to delve deeper to understand the wants, needs and purchasing drivers associated with ever-increasing numbers of customer segments, it is critical that these organizations use all the resources at their disposal to gain a competitive edge. One of these resources—vast stores of information about customers, incentive programs, products and services—already exists within every retail company's IT systems. The key is simply to unlock the power of this strategic asset, transforming it into information on demand.

IBM offers a broad range of expertise and industry insight to help guide businesses through the process. Through the IBM Information On Demand Center of Excellence, companies can work with experts from across IBM to develop the critical competencies that are necessary to move along to the road to Information on Demand.

For more information

To learn more about using IBM Information Server in the retail industry, contact an IBM marketing representative or visit ibm.com/software/data/integration



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¹ IBM Attributes & Capabilities Study, 2006; client interviews and industry analysts, 2005.

² Ibid.

³ The CDI Institute. The CDI Institute Survey. 2006.

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TAKE BACK CONTROL WITH **Information Management**