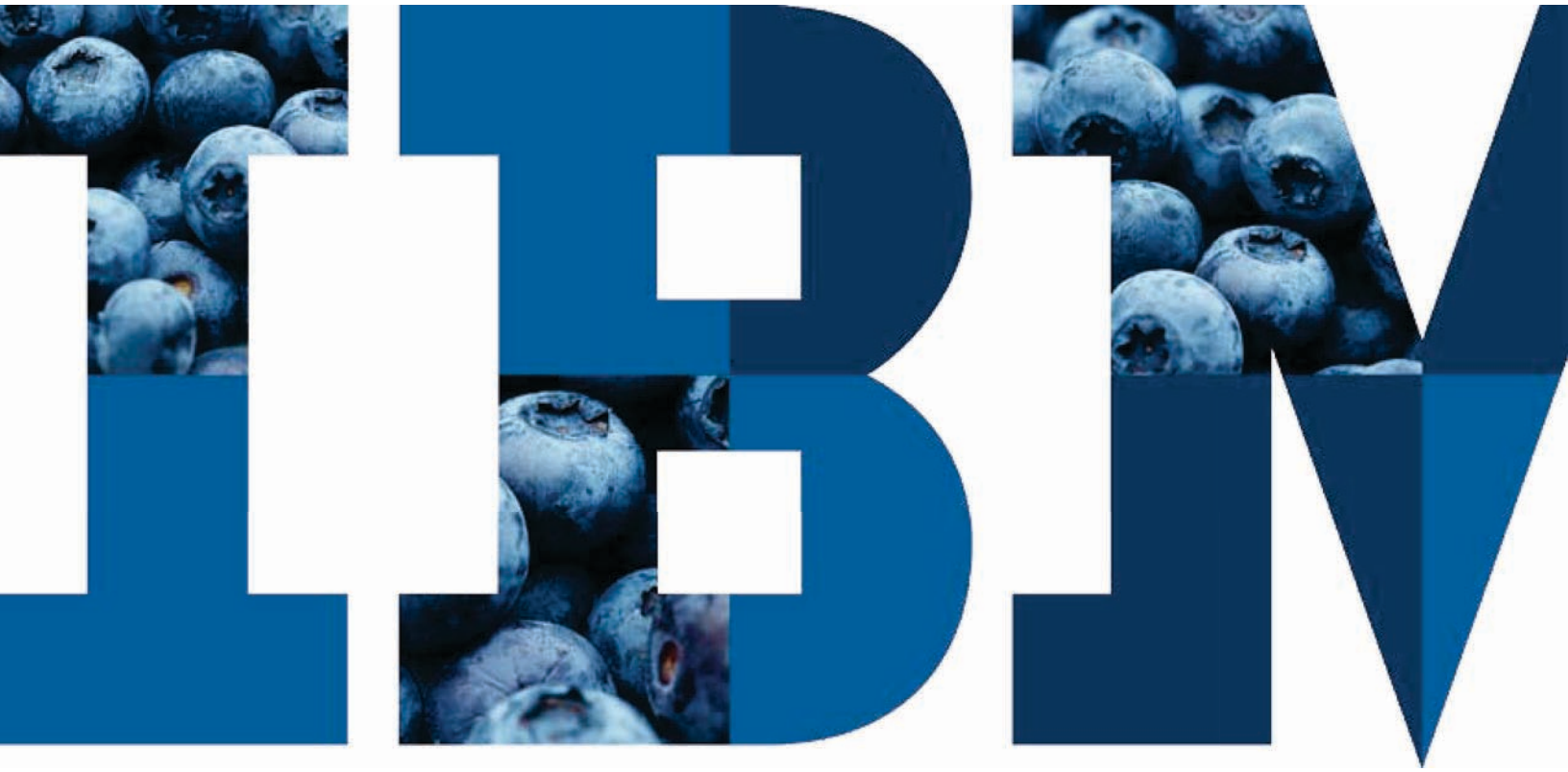
IBM Software Group
White Paper

Manage enterprise data with Integrated Data Management

A comprehensive approach to delivering business value across the organization



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Executive summary

Business leaders understand that the data their organizations collect and use is a powerful resource, but one that is often underutilized. Ineffective data management can increase complexity and risk, raise storage and management costs, degrade service levels, complicate disaster recovery scenarios and cause organizations to miss out on potential value.

Unlocking the value of enterprise data can be a difficult challenge in today's complex, heterogeneous, geographically dispersed business/IT environments. Even the most basic communication between the business and technical sides of an organization is not always a given: Business leaders often do not understand the contributions of the IT staff, while IT staff are often so overburdened with business critical IT tasks that they do not document their contributions for business leaders.

To successfully harness organizational data to business goals and manage data and data-driven applications so they deliver business value, enterprises need a comprehensive approach to managing data throughout its life cycle. Integrated Data Management is an approach that can deliver those benefits. It helps enable organizations to manage enterprise application data—from requirements to retirement—across diverse environments. The benefits of such a solution include improved manageability, optimized performance, improved data privacy and protection and improved alignment—across IT roles and between business units and IT. It also helps enterprises control data management costs, reduce risks and maximize the performance of data-driven applications.

Adopting an Integrated Data Management strategy can be a highly effective way to help IT support business growth, facilitate data governance and manage costs. It is also key to helping ensure that the enterprise derives maximum competitive advantage from its data.

Obstacles to a streamlined approach to data management

The lack of an Integrated Data Management strategy can have a direct, negative impact on an organization's bottom line. Access to the right data at the right time is critical for decision makers at every level of an organization. If that information is unavailable, inaccurate or even difficult to access, organizations may miss opportunities opened by subtle market shifts, changes in customer requirements or improved supplier capabilities. The lack of accurate, timely information can expose organizations to unperceived risks, while forcing them to spend additional resources preparing for the unexpected. And, at the purely operational level, the lack of an effective data management strategy can increase expenses for data storage, processing, maintenance and disaster recovery.

Given those realities, it's not surprising that data management has become a key area of focus for CIOs. However, effectively managing data is a difficult task for a number of reasons. Start with data growth: Data is growing exponentially and organizations need effective strategies to mitigate the risks and costs associated with managing and storing increasing volumes of enterprise application data and associated applications.

Performance management pitfalls are another reason Integrated Data Management is crucial but challenging: Organizations need developers to deliver applications that perform to meet client expectations and service-level standards, but doing so is harder because increasingly diverse workloads contend for limited system and database resources and growing data volumes negatively impact application performance. Without deep visibility both into and across the application stack, effective performance management is not possible. Too often, organizations have to rely on a variety of disparate, heterogeneous diagnostic tools, which may be vendor-specific and tied to a specific stage in the data life cycle. The result: Service-level objectives are missed, business users experience unanticipated application and database outages, customer satisfaction declines and revenue opportunities are lost.

Communication and collaboration between developers and database administrators (DBAs) is yet another obstacle to more efficient data management. Developers focus on delivery of application functionality, while DBAs are primarily concerned with optimizing performance to meet service levels. In the absence of an integrated database development environment where they can collaborate, those two skilled teams can end up inadvertently working at cross purposes. For example, the application team delivers highly functional but perhaps not optimally performing applications, thereby putting the burden on the DBA to solve resulting performance issues. The DBA faces challenges regarding performance monitoring and tuning since insight into the issuing application is not clear. As a result organizations may see slower application development, and reduced database performance.

There are many other data management challenges, from data privacy requirements to shifting paradigms in data access technology. But they all act to prevent organizations from gaining a holistic view of their data resources and then mobilizing them to support the business.

Integrated Data Management—definition and capabilities

Integrated Data Management is a strategy for creating an integrated, modular environment to manage enterprise application data and optimize data-driven applications, from requirements to retirement, across heterogeneous environments. It supports each phase of the data life cycle with robust offerings for data-centric tasks and roles, and delivers integration that facilitates consistent, effective data management. In addition, it gives organizations the ability to grow the business without growing the associated cost base.

Implementing an Integrated Data Management approach helps enable extensive collaboration among staff members with different roles who must share information and work within a common infrastructure. Some of these roles and their responsibilities include:

- Business analysts: define and communicate business needs
- Architects: make data quality and enterprise consistency integral to system design
- Developers and testers: build enterprise-ready applications
- DBAs: help ensure database performance and availability
- Systems administrators: guarantee the infrastructure is available and performing
- Application managers: develop new and help ensure existing applications meet business needs
- Executives: harvest data to make business decisions
- Data steward: improve all facets of data governance, including availability, security, privacy, quality, audit and retention

For an Integrated Data Management approach to succeed, it must support diverse, interrelated enterprise environments, including:

- Storage platforms: Online, near-line and offline. Depending on where data is in its life cycle, it may be stored on different platforms and be related across them.
- Operating systems: Linux®, UNIX®, Windows®, IBM® iSeries®, IBM zSeries®
- Database platforms: IBM DB2®, Oracle, SQL Server®, Sybase
- Enterprise resource planning (ERP) and customer relationship management (CRM) systems: SAP, PeopleSoft, Siebel. The systems are integrated, share information and need to be managed in a consistent manner.
- Custom applications: Developed in-house to meet unique business requirements using various technologies, for example, Java™, .NET®, CLI.

Meeting three key business challenges with Integrated Data Management

An effective Integrated Data Management strategy can help enterprise IT departments meet three key challenges: support business growth, manage costs and facilitate data governance. IT departments that meet those challenges clearly contribute to overall business success, justifying the decision by executives to invest in data management.

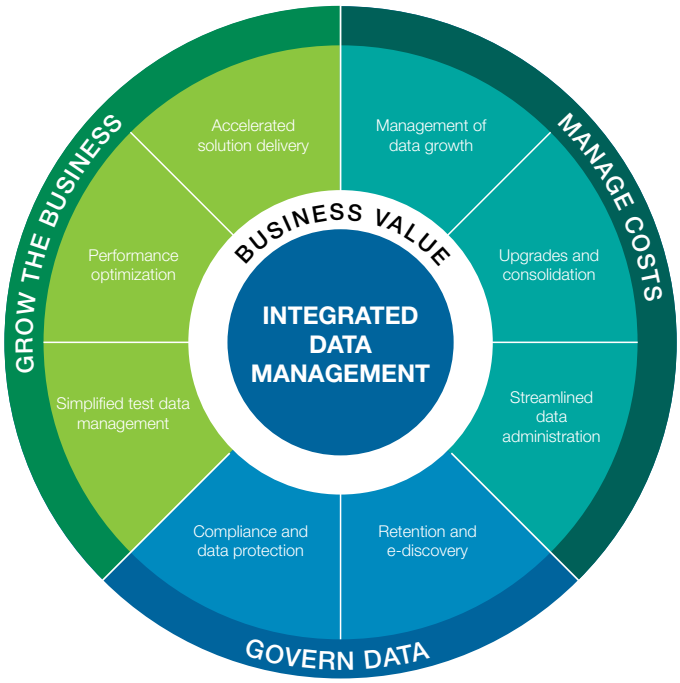

Figure 1: Integrated Data Management can help IT departments support business growth, simplify infrastructure and facilitate data governance.

Supporting business growth with Integrated Data Management

Supporting business growth means delivering added value to the business whether supporting transaction growth of existing applications or delivering new applications that add insight and automation to the business.

Accelerated solution delivery

An Integrated Data Management approach delivers enterprise-ready applications faster. That's because the environment streamlines connections between design, development and deployment, improving alignment and collaboration across roles leading to better performance—of the team as well as the application. Common user interfaces (UIs), common components and services and shared policies, models and metadata help enable your enterprise to bring new capabilities to market faster and with greater agility. Rapid solution delivery also means organizations are flexible to support emerging development trends and business needs. For example, application changes required by the business are easily implemented with minimal rework or additional planning. This avoids scrambling around in high pressure situations where quality is likely to be sacrificed. The data environment is nimble and responsive.

Integrated capabilities

- Business and data modeling
- Data discovery
- Software delivery platform
- Test data management
- Database administration

Key benefits

- Deliver enterprise-ready applications faster
- Deliver better quality, agility and alignment
- Improve resource utilization and collaboration
- Reduce risk

Performance optimization

Performance optimization is about managing systems to help ensure performance doesn't degrade and systems continue to perform at their highest possible level, even as the amount of data, number of concurrent users, number of locations and number of systems grows. An Integrated Data Management approach facilitates proactive tuning and management to stay ahead of the curve in addition to fast problem resolution.

Integrated capabilities

- Performance tuning—pre- and post-production
- Query tuning both for single statements and workloads—pre- and post-production
- Database and application monitoring
- Database maintenance
- Archiving

Key benefits

- Boost customer satisfaction, revenue and organizational productivity
- Grow the business without growing infrastructure costs
- Comply with data retention and data retrieval policies

Simplified test data management

Realistic, sophisticated testing is critical to delivering reliable applications that meet real business needs. But acquiring and managing the data necessary to fully test new applications can be time-consuming, expensive and can even increase the risk of data exposure. An Integrated Data Management approach includes the ability to create subsets of critical data to test against, enabling organizations to manage test data at the business object level and to control the size of development and testing environments. Data can also be masked to protect privacy and support regulatory compliance.

Integrated capabilities

- Automated test result comparisons
- Data subsetting
- Data masking

Key benefits

- Increase test accuracy
- Strengthen regulatory compliance
- Speed implementation
- Minimize storage requirements

Reducing overhead, cost and complexity

As a result of mergers and acquisitions, many organizations have redundant systems, business processes and technologies. They also have difficulty consolidating information captured from multiple sources and leveraging it for business intelligence. Implementing an Integrated Data Management strategy can help simplify infrastructures and reduce overhead and complexity, thereby controlling costs and increasing technology return on investment (ROI).

Upgrades and consolidation

Upgrading mission-critical applications, retiring systems and retiring applications are all inevitable parts of the IT life cycle, but organizations must be careful to preserve access to enterprise data. An Integrated Data Management strategy has an archiving component that allows IT to move vital data while maintaining access to all the original data in its business-object form, even without the original application. Integrated Data Management can thus help ensure faster, safer upgrades, data migrations and consolidations.

Integrated capabilities

- Archiving
- Data cleansing, unloading and loading
- Existing data and relationship discovery
- Database migration

Key benefits

- Improve application performance
- Reduce cost of storage and overall total cost of ownership

Management of data growth

The rapid growth of application data in production systems is replicated across all "cloned" environments, such as development, quality assurance and staging environments. Adding to the complexity, it is not uncommon for organizations to maintain several backup copies of critical data or to implement mirrored databases that provide assurance against data loss. As data is duplicated, storage and maintenance costs increase proportionally. Integrated Data Management allows organizations to address the "multiplier effect" on data growth without diverting additional resources from IT business initiatives.

Integrated capabilities

- Archiving
- Test data management
- Enterprise content management
- Existing data and relationship discovery

Key benefits

- Reduce and control costs
- Improve application performance
- Comply with retention regulations

Streamlined data administration

The business objective of streamlined database administration is to intelligently manage the database to help ensure the highest levels of performance and availability to support business transactions and business decisions. This means managing change without disruption, maintaining database health and managing performance to service-level objectives. Streamlined data administration allows IT departments to manage heterogeneous databases across the enterprise using a common Integrated Data Management environment instead of multiple tools for multiple platforms and databases. DBAs, who are principally responsible for database administration, gain a comprehensive solution that helps them accomplish their top routine tasks: performance management, availability management, database maintenance and application management.

Integrated capabilities

- Proactive performance tuning
- End-to-end performance monitoring
- Comprehensive backup and recovery strategy
- Best practices for change management
- Integrated database and application administration

Key benefits

- Manage change with minimal disruption to meet business objectives
- Prevent unintended application downtime
- Improve ability to consistently meet service-level agreements (SLAs)
- Free up DBAs to focus on value creation
- Reduce costs

Practicing data governance with the right policies and documented compliance

Data governance has many facets: availability, security, privacy, quality, audit and retention, among others. Those tasks are split across many roles, which can make it difficult to coordinate initiatives and gain a high-level view of the organization's data governance status, progress and needs. An effective data governance solution includes compliance-savvy tools, consistency across the life cycle in privacy and retention policies, protection from threats and coherent auditability. An Integrated Data Management strategy meets all those data governance goals and enables organizations to comply with internal policies and external regulations.

Compliance and data protection

Organizations have realized that compliance with such regulations as HIPAA, DDP, NPP and others not only protects confidential information from misuse, but also helps maintain customer confidence. By setting standards, implementing policies and enforcing them, an Integrated Data Management approach can streamline and simplify the steps required to govern information assets. Ideally, the approach should include intelligent tools that aid in compliance by offering, for example, intelligent data masking routines. An Integrated Data Management solution can also help organizations protect sensitive information against misuse or internal threats via advanced access control techniques, and against external attacks via best-practice encryption schemes.

Integrated capabilities

- Audit management
- Integrated database administration
- Data privacy and masking
- Data retention
- Encryption
- Existing data and relationship discovery

Key benefits

- Reduce costs
- Prevent fines
- Help ensure data integrity
- Avoid customer loss
- Prevent loss of intellectual property

Retention and e-discovery

Simply retaining every bit of data captured or generated in order to comply with data retention regulations such as the Sarbanes-Oxley Act, SEC-17a, Basel II and others would, over time, produce databases of unmanageable size, hamper performance and increase storage costs. An Integrated Data Management strategy can help by defining the value of each set of data at various points in the life cycle and promoting communication between IT and business users to establish policies for archiving, storing, accessing and retaining data.

Integrated capabilities

- Integrated structured and unstructured data management
  - Enterprise content management
  - Structured data archiving
- Existing data and relationship discovery

Key benefits

- Reduce costs
- Use a single retention policy across all data
- Catalogue all types of data
- Remove unnecessary data from production environment
- Automate data shredding
- Secure storage

Integrated Data Management delivers substantial savings for enterprises

The following enterprises have saved millions of dollars in as little as three years by implementing an Integrated Data Management strategy:

Enterprise	Results
Insurance company #1	250TB DASD storage reduction, 50% reduction of test refresh time and effort[1]
Insurance company #2	US$1 million savings per application for test data management over 3 years[1]
Bank	US$90 million projected savings with test data management over 3 years[1]
Mutual fund firm	US$2.3 million savings with test data management over 3 years[1]
Health insurance company	US$1.1 million savings with archiving over 3 years[1]
Large software provider #1	Reduced CPU per transaction up to 42% using Optim pureQuery technology on DB2 for x/OS[2]
Large software provider #2	Increased throughput of DB2 LUW database server up to 66%[2]

Univar increases developer productivity up to 50 percent with Optim Development Studio and pureQuery

Univar USA is the leading chemical distributor in the United States, providing more chemicals and related chemical distribution services than any other company in the marketplace.

Univar company executives must quickly respond to new regulatory requirements, mergers and acquisitions, and evolving customer needs. This means that Univar developers must swiftly make changes to business-critical applications without compromising performance, availability or scalability. However, traditional object-oriented development tools made it difficult for developers to leverage relational data during development. As a result, developers often limited the number and types of data sets tested. This increased the likelihood of problems during user acceptance testing, which increased the time and cost of the development process.

To improve the process, Univar selected IBM Optim™ Development Studio as the single data management platform to design, develop, deploy and manage its data-driven applications across IBM DB2 for z/OS® and other data servers.

The pureQuery capability enabled Univar developers to explore how workloads are executed without the performance and usability challenges they encountered with other tools. Meanwhile, IBM pureXML® technology made it easier for developers to import and work with XML documents in a relational database. IBM has also advanced the ease of developing, debugging and testing stored procedures by embedding this capability within the tool itself. With these innovations, developer productivity has increased by 25 to 50 percent. And, because Univar developers can now thoroughly leverage relational data during development, they can discover faulty assumptions and get resolution from business sponsors early in the design process. This helps reduce development costs, as it's 50 to 75 percent more expensive to fix design problems during implementation.

Benefits Univar has received include:

- Speeds the development of high-quality applications
- Improves developer productivity by 25 to 50 percent
- Reduces development costs by 50 to 75 percent by forestalling design problems during implementation

Managing data for competitive advantage with Integrated Data Management

Managing data throughout its lifetime, from requirements to retirement, so it delivers maximum value to the organization is a cornerstone of long-term business success. The ideal approach streamlines processes and simplifies complex infrastructures; improves governance across applications, databases and platforms; protects data privacy; boosts application performance, and increases collaboration and efficiency across roles. An Integrated Data Management solution from IBM delivers all of those benefits and makes it possible for organizations in a wide range of industries to respond effectively to emerging, data-intensive business opportunities and to sharpen and maintain a competitive edge.

For more information

To learn more about IBM Integrated Data Management solutions, contact your IBM sales representative or visit: **ibm.com**/software/data/optim

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1 Independent test results reported to IBM by customers.

2 Independent test results reported by IBM.

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