IBM. Information Management software

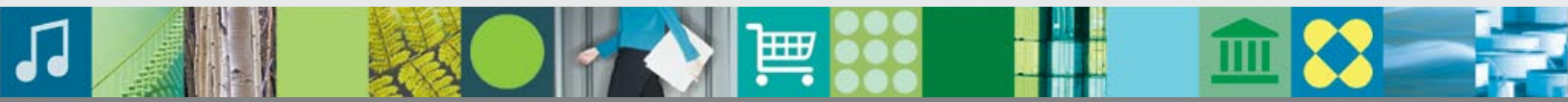
Manage your business, not your data server.

Transforming data into actionable business information with DB2 9.

Ask any CEO what challenges they face over the next few years, and you'll likely not be surprised by their response: revenue growth, along with a return to top-line growth that keeps costs in check. It's the conversation that continues that might cause the CIO and their staff to listen a little more closely: Develop core competencies in data centers that enable rapid response to new products and services opportunities—and competitive threats; build an agile enterprise capable of making decisions quickly, if not on the fly. And finally, create an information infrastructure that delivers the right information in the right form at the right time to the right person. Succeed in these areas, and the resulting organization will be one comprised of effective people empowered by operational efficiencies.

What's getting in the way of progress? Data and increasing volumes of it. Storage requirements have been increasing at a compound rate of 37 percent between 1996 and today. Add to that an acceleration in data processing with less time to process more data, and you have potential performance issues.

But the roadblocks on the path to a resilient, low-cost organization don't stop with data. How much time do you (and those within your company) spend just searching e-mails, databases, faxes, documents and URLs for relevant information? Only 15 percent of a typical enterprise's information is stored in a relational database. The remaining 85 percent (of which e-mails are a part) are a crucial form of information that must be managed with the same rigor as relational data, particularly with regulatory compliance mandating that companies produce e-mail on demand.



XML and relational data? Yes, you can.

What will happen to that mass of non-relational data that helps comprise the backbone of so many of today's companies? More than likely it will evolve to an XML format. Much the same way flat files evolved to relational databases, XML data will migrate to relational databases to acquire the same coveted qualities of service that relational databases provide: high availability, reliability and performance.

Consider for a moment an environment (probably much like the one your company exists in) consisting of numerous application silos and repositories, for example, an SAP ERP system in a DB2® database; a homegrown application, and a content management system with a third-party database. Force-fit that information into a row-and-column format, and you lose its business context and value. Or as many organizations do, you can build a unique information architecture for each application and silo. Both options render the same results: slower, higher cost development, and incomplete and inconsistent business insights too late to react competitively.

Why having pureXML® and relational data in a single database is important to your business:

- Increase productivity by accessing both relational and XML data within a single request
- Preserve the integrity of XML documents by removing the need to shred or decompose XML data
- Improve search performance with highly optimized XML indexes
- Scale the application with a database proven to manage terabytes of data
- Reduce costs by utilizing existing IT skills familiar with either SQL or XQuery
- Protect XML data with the same mature and reliable disciplines to administer security, recoverability and high availability

Embrace the future with pureXML

It doesn't have to be that way. Your XML data is there; you just need to access it faster and simpler. You can transform XML into actionable business information. The pureXML technology in DB2 9 (formerly code named Viper) unlocks the latent potential of XML by providing simple efficient access to XML with the same levels of security, integrity, and resiliency taken for granted with relational data. DB2 9 stores XML data in a hierarchical structure that naturally reflects the structure of XML. This structure along with innovative indexing techniques allows DB2 to efficiently manage this data and eliminate much of the complex and time-consuming parsing typically required for XML. With DB2 9 at the core of a service-oriented architecture (SOA), it's possible to achieve seamless and efficient integration of XML and relational data.

Powering the next generation of agile SOA applications

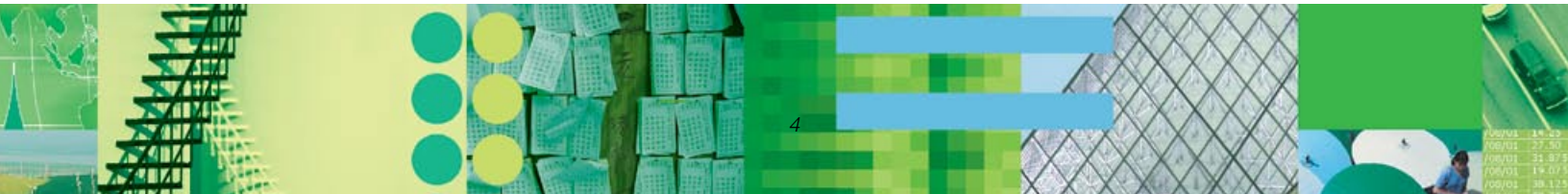
XML is a key ingredient to solving business problems as XML represents information as your business really uses it. By delivering this information as a service or SOA, DB2 9 makes XML more flexible, connecting information where you need it, when you need it. Simply stated, DB2 9 is the only open standards-based, hybrid data server able to seamlessly manage both relational and pureXML data in a single request, without requiring reformatting of XML.

To function properly, SOA implementations must access a myriad of data stored across multiple formats. A pureXML server, DB2 9 frees that data from the static form it has been forced into by relational-only database products, better delivering information as a service for on-the-fly access in SOA environments. Because DB2 9 stores the XML in a natural hierarchy, it's able to support dynamic schema changes without the complexities associated with changing relational schemas.

Norwegian financial institution and early adopter of DB2 9, Storebrand, wanted to process credit-check applications faster. After running DB2 9, they achieved dramatic results:

- Improved development time down to 30 minutes, a striking improvement from CLOBs that locked up the data value and XML shredding that broke the XML into small pieces
- Improved processing times that allowed Storebrand to generate new business
- Reduced full queries that needed to access relational and XML data, allowing the company to produce five times more business than previously possible

With pureXML innovation, your organization can expect breakthrough increases in the availability, speed and versatility of your information, along with dramatically reduced administrative costs associated with existing data management techniques. Developers can leverage existing skills since they can use familiar SQL or XQuery to access any DB2 data and thus spend less time writing code to create applications to access relational data or XML repositories. With DB2 9, for the first time, XML data is cost effective and enables greater business insight faster at a lower cost.



> *"Our development time using DB2 9 pureXML store is a radical improvement over existing XML 'shred' technology. We are now able to make schema changes in minutes rather than days and will dramatically improve our customer response time."*
>
> – *Thore Thomassen,*
> *Senior Enterprise Architect, Storebrand*

Leading benchmark performance

DB2 has established an unmatched record of outstanding performance on a wide variety of industry-leading SAP benchmark tests. In the premier SAP SD 3 Tier Application Benchmark, DB2 delivered 68 percent better performance using half the number of CPUs compared to the nearest Oracle result. DB2 has been designed with unique scale out and scale up capabilities along with tight linkages between it and SAP application logic to consistently deliver optimized performance.[1]

Optimized for SAP, delivering on the partnership

When you're tasked with doing more for the business with less staff and smaller budgets, it's critical to leverage the systems and applications you already have in place. With DB2 9, you can enable SAP solutions across the widest available range of hardware and operating system environments, including AIX®, HP-UX, Linux®, Solaris, Microsoft® Windows®, OS/400® and z/OS®.

The alliance of DB2 9 and SAP solutions represents more than just a technology agreement. Along with industry-leading platform support at outstanding savings, the two companies offer:

Partnership — *Unique in the industry, all DB2 optimized for SAP solutions are jointly developed by IBM and SAP teams who work together in development, service, quality assurance and testing.*

Integration — *DB2 for SAP solutions ship fully integrated as one product. From integrated installation, to one-stop service to synchronized maintenance, you can rely on the ease and simplicity of one product, one service, and one maintenance strategy.*

Lowering the cost of storage and storage management

In DB2 9, a single point of storage management or simplified storage administration gives developers a new spectrum of control for table storage. Pursue the flexibility and granularity of individual containers, or if you choose, use SMS storage for automatically growable storage. You control the power and flexibility of the individual containers, but the management is automated (by default only for new databases—automation is your choice for upgraded databases), future-proofing your organization's use of DB2 to interface with policies dedicated to storage subsystems.

Partitioning for availability

In addition to breaking new ground with its pureXML capability, DB2 9 will also be the first data server to simultaneously support all three common methods of database partitioning—a major innovation in improving data management and information availability. By simultaneously handling range or table partitioning, multi-dimensional clustering and hashing, DB2 9 lets DBAs arrange and order information in the way that best suits your individual business requirements and demands.

With the ability to use all three partitioning mechanisms together, you can:

- Create and manage much larger database systems by putting multiple table spaces under a single table.
- Divide data across multiple machines.
- Organize data by dimension.
- Manage the roll in and out of data.
- Manage data load or backup by partition.
- Improve query performance with separated data that prevents scans of irrelevant data.

The result? Store tables across more than one table space and increase table capacity limit, along with your ability to make bigger databases and larger tables. Tune your entire system by selecting which storage subsystems merit the most expense in terms of storage and performance, based upon business need and value.

Storage optimization

As data volumes grow and regulatory compliance forces retention of more data for longer periods of time, the costs associated with storing information become increasingly important. DB2 9 includes unique storage optimization technology that dramatically reduces both the space and costs associated with storing relational data. DB2 identifies repeating data patterns found within a relational table and then efficiently condenses the space required by eliminating the need to repetitively store these patterns. The savings from this compression can be significant. Tests on data used in the industry standard TPC-H data warehousing benchmark, demonstrated between 45 to 69 percent savings in disk space.

> *"The new compression method translates into direct storage savings at an average ratio of 45 to 75 percent, depending on the data type. In fact, the compressed data actually performed a little better."*
>
> *– Sean McCown, InfoWorld*

Compression adds to performance

Compression delivers more than just online disk savings. Additional, significant savings come from space required to store recovery logs and database backups since the data remains compressed here as well. The data remains compressed while in DB2 memory buffers, which can significantly reduce the amount of I/O required. As a result, overall system speed and performance often improve despite using more CPU cycles.

Manageability simplified

Moving your business forward means having a data server that supports a service, not a high-maintenance database that requires managing. DB2 9 protects precious IT hours with adaptive self-tuning memory, going well beyond dynamic configuration or even automated system recommendations of former versions. Adaptive, self-tuning memory management simplifies the task of memory configuration by automatically setting values for memory configuration parameters and sizing buffer pools. When enabled, the memory tuner dynamically distributes available memory resources between several memory consumers including sort, package cache, and lock list areas, as well as buffer pools. This improves performance by providing a superior configuration that is dynamic and responsive to significant changes in workload characteristics.

More security, more resiliency

DB2 9 takes security to the next level with improved control over database security. Fine-grained, label-based security and a new security administrator authority level give you greater control over information access and improve reporting capabilities for monitoring access to sensitive data. Label-based access control (LBAC) lets administrators create a separate column within tables that associates a label with each row of data and each user. Trusted context avoids the cost of authenticating every user that comes into the system. The application creates a trusted context or communication with the DB2 data server.

Recovery: There when you need it

It happens. You're in the middle of a recovery operation and you have to stop before the operation is complete or worse, it fails. New recovery features in DB2 let you pick up where you left off, without returning to the beginning of a recovery operation. The features include the ability to:

- Restart interrupted recovery operations, saving precious time and effort in database recovery situations.
- Support for performing redirected restore operations with scripts automatically generated from existing backup images.
- Rebuild databases from table space backup images. This functionality makes DB2 recovery incredibly robust and versatile, giving you a more complete recovery solution.

Committed to your success

With the announcement of DB2 9, IBM continues its commitment to industry-leading performance based on open, industry standards. DB2 clients will continue to support 32- and 64-bit hardware platforms, as well as Windows and Linux; conversely as we continue to look forward, IBM is focusing on 64-bit images for AIX, Solaris and HP.

Whether your organization deploys DB2 Express, Workgroup or Enterprise, all DB2 editions run on the same code base. IBM does not differentiate editions based on our customers' ability to run your application or code against them. In fact, you can start with DB2 Express-C 9 which is free to develop, deploy and redistribute. Since 90 percent of our code is common across all operating systems, you don't have to recode your application regardless if you run your data server on Linux, Windows, AIX or any of the other platforms we support.

For more information

By providing two storage formats—relational and pureXML under a single engine, DB2 leads the way by providing a single data server to store all your critical business data with the high performance and reliability you expect from a leading database provider.
For more information about DB2 9 and how it can help you solve real business problems faster at a lower cost, contact your local IBM Business Partner or visit: **ibm.com**/db2/viper

Additional DB2 9 manageability enhancements include:

- Automatic statistic collection enabled by default when creating databases to ensure the correct statistics are collected and maintained.
- Automatic storage support for multipartition databases. This feature automatically grows the size of your database across disk and file systems.
- Ability to change some attributes of tables without having to drop and recreate the tables.
- New policy options that provide DBAs with new automatic table and index reorganization capabilities.
- Ability to copy database schemas and create model schemas that once established, can be used as a template for creating new versions.

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[1] DB2 UDB 8.2.2 (168,300 SD users) running OS AIX 5.3; IBM @server p5 Model 595, 32-way SMP, POWER5, 1.9GHz, 32KB(D) + 64KB(I) L1 cache per processor, 1.92MB L2 cache and 36MB L3 cache per 2 processors, 256GB main memory and SAP R/3 Enterprise 4.70, certification number 2004068 versus Oracle 10g (100,000 SD users) running OS HPUX 11i; HP Integrity Model SD64A, 64-way SMP, Intel Itanium 2 1.6GHz, 32KB L1 cache, 256KB L2 cache, 9MB L3 cache, 256GB main memory, certification number 2005021.

This benchmark fully complies with the SAP Benchmark Council regulations and has been audited and certified by SAP AG. More information on SAP Standard Application Benchmarks is available at www.sap.com/benchmark.

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