DB2 10 for z/OS

Proven, simplified and cost effective

IBM

Executive summary

It's no longer enough to have IT that is robust, secure and operationally efficient: in the current business climate, it must also be cost-effective, simple and proven. With all the key capabilities you expect from DB2®—and new ones, like 64-bit support, scalability for tens of thousands of concurrent users, and SQL and pureXML® enhancements—DB2 10 for z/OS® achieves even greater heights of availability, resiliency, reliability and security, all while delivering out-of-the-box value. How? Reduced CPU usage, which directly benefits the bottom line. And that's just the beginning.

In addition to five to ten percent CPU savings out-of-the-box, and up to 20 percent CPU savings for specific (see Reduced Costs, page 4) workloads, DB2 10 for z/OS also scales five to ten times more than prior DB2 versions—with less complexity and cost. Automatic tuning and diagnostics create less need for System z®-specific skills, and refined lock-avoidance techniques create greater concurrency for data access, data definition and data management.

DB2 10 for z/OS also offers more availability, with fewer planned and unplanned outages than ever before. The legendary security that has made DB2 the undisputed leader in enterprise data servers has been increased further, delivering simplified compliance. Let's dive deeper into all the new features and enhancements that make DB2 10 for z/OS the industry leader in data servers.

Introduction

Now more than ever, CIOs, CFOs and IT architects are looking for enterprise-data serving solutions that not only perform, but are also cost-effective, well established and easy to use. DB2 10 delivers the value businesses are demanding by reducing overall CPU usage—a direct result of optimized processor times and memory access, z/OS enhancements, and substantial technological advancements. Adaptable businesses also require scalability and resiliency for business-critical information. Just a few minutes of downtime for critical applications can do significant damage to an organization's bottom line. Avoiding downtime is an important component to building competitive advantage in an on-demand world. It is this industry-leading, proven scalability and resiliency that make DB2 for z/OS and the System z platform a foundation for businesses and organizations worldwide, allowing them to run and grow workloads with optimum efficiency.

In addition to supporting outstanding scalability, availability and performance, DB2 10 is designed to simplify database administration. Tasks have never been easier to perform, and tools are readily available. Simplicity is a hallmark of the design of DB2 10.

To remain competitive, businesses must be responsive and agile. DB2 10 creates new opportunities for both, with SQL and pureXML enhancements that extend usability and improve performance. When combined with enhanced query and reporting facilities—via Query Management Facility™ (QMF) 10's built-in data visualizations and graphical page-based reports—DB2 10 for z/OS enables businesses to sustain and grow their competitive advantage.

DB2 10 for z/OS

DB2 10 offers key enhancements, improvements and features, including:

- Reduced hardware and software cost by reducing CPU usage
- Improved business resiliency
  - Improved scalability and availability
  - Increased security and simplified compliance
- Improved productivity by
  - Simplified application development
  - Reduced administration and system management
  - Flexible migration paths
  - Enhanced query and reporting facilities to get more out of your data – faster and easier

DB2 10 for z/OS: Reduced costs

The most dramatic achievement of DB2 10 comes from reduced CPU usage. Compared to previous versions, most customers can achieve out-of-the-box CPU savings of five to ten percent for traditional workloads, and up to 20 percent for some specific[1] workloads. DB2 reduces CPU usage by optimizing processor times and memory access, and leveraging the latest processor improvements, larger amounts of memory, and z/OS enhancements. Improved scalability and constraint relief can add to the savings, while productivity improvements for database and systems administrators can drive even more savings.

"DB2 10 for z/OS keeps pushing the limits. Compared to previous versions, there are at least 5% to 10% CPU savings out-of-the-box. There are also additional savings with the synergy of a new zEnterprise™ system for even greater value, and the Temporal Table feature will simplify compliance rules. Besides many new on-line object level alterations such as altering segment size, adding an active log dataset without recycling DB2 itself is exciting. New Profiling Tables and Attributes greatly enhance and simplify the management of distributed threads accessing from the outside world. And the skip release option provides flexibility and simplifies migration as you plan for DB2 10 for z/OS. These are just some of the sensational features. DB2 10 for z/OS redefines the rules of how an industry-leading database should be."

– Cuneyt Goksu
VBT Consulting

DB2 10 for z/OS: Proven technology

DB2 for z/OS is the undisputed leader in total system availability, scalability, security and reliability. DB2 10 builds on the formidable capabilities of DB2 9 for z/OS and continues to set the standard, delivering improved scalability and availability. Businesses can scale five to ten times more active concurrent users, with less complexity and cost, all while consolidating to fewer LPARs and subsystems. DB2 10 provides virtual storage relief, much better vertical scalability, and improved availability of your DB2 subsystem by moving most memory to 64-bit storage.

Even during unexpected circumstances, you still need to keep your business up and running. That's why business resiliency is a key component of System z, z/OS, and DB2 for z/OS. Innovations in DB2 10 drive new value in resiliency through scalability improvements and fewer outages, whether those outages are planned or unplanned. Improved availability is supported by schema evolution—or data definition on demand—and manageability enhancements for more flexible data design keep the business running and people productive. Security improvements also contribute to robust business resiliency.

"Over the past several months, BMW has tested the new version of DB2 10 for z/OS, focusing on specific features and comparing these directly to the same features in DB2 9 for z/OS. One of the IBM design goals expected a general improvement in massive parallel SQL-insert performance, where we achieved close to 40% CPU improvement and significant elapsed time reduction in direct comparison to DB2 9 for z/OS. For all of our critical tested SELECT statements, the version 10 optimizer chose the optimal access path, sometimes even improving previous access path choices in version 9. Overall, we are very pleased with the added functionality and architectural enhancements, and are looking forward to this exciting release."

– Philipp Nowak and Peter Paetsch
Database Administrators
BMW Group

DB2 10 for z/OS: Simplified database management

DB2 10 provides online schema enhancements that allow you to make more changes to database objects (indexes and table spaces) while maximizing the availability of the altered objects. Through enhancements to ALTER statements, you can now change indexes and table spaces without having to unload the data, drop and re-create the objects, regenerate all of the security authorizations, re-create the views, and reload the data. Now, the changes are materialized when the altered objects are reorganized—yet another feature of DB2 10 that keeps it ahead of the competition.

Simplified compliance and increased security

DB2 10 for z/OS provides critical enhancements to security and auditing, strengthening DB2 security in the z/OS environment. For example, DB2 10 provides increased granularity for DB2 administrative authority, and offers a new DB2 data security solution that enables you to manage access to a table at the level of a row, a column, or both. Now you can be sure your critical data is safe, and you can define and create different audit policies to address the various security needs of your business.

Simplified application development and improved productivity

Staying competitive in today's global economy is tougher than ever, requiring agility, adaptability and responsiveness. SQL and pureXML enhancements in DB2 10 help extend usability, improve performance and ease application portability to DB2 for z/OS, supporting your efforts to create a sustainable competitive advantage.

"I have over 17 years DB2 DBA experience on System z and over 10 years Oracle DBA experience. My experience includes database design and definition, performance tuning and systems programming. I am really excited about DB2 10 — besides the CPU savings and usual system performance and functionality improvements which just get better with each version, DB2 10 for z/OS delivers an excellent and far superior data server environment for applications portability and enablement."

– Manuel Gómez Burriel
  CECA (Confederación Española de Cajas de Ahorros)

Advancements in SQL and XML improve productivity for those who develop new applications, and for those who are porting from other platforms. With the dramatic global increase in XML data—and hundreds of XML applications in development—automating, reducing or eliminating tasks improves productivity and can help avoid bottlenecks. Resiliency improvements for virtual storage and availability increase productivity, and the install, migration and service processes are faster and more reliable.

More cross-platform SQL and XML support

SQL enhancements to DB2 10 improve productivity and DB2 family consistency—all while simplifying the ability to port to DB2 for z/OS from other platforms and database management systems.

This release of DB2 for z/OS also substantially improves productivity and performance for pureXML. Optimized performance includes support for the binary XML format, XML schema validation as a built-in function, XML date and time data types and functions, XML parameters in routines, and much more. In essence, it's never been easier to manage your XML data.

Flexibility in migration paths

Supporting migration from either Version 8 or DB2 9 provides Version 8 customers with greater flexibility and more efficient migrations, with less downtime. You can migrate a DB2 Version 8 subsystem in new-function mode directly to DB2 10 without a DB2 9 step.

Enhanced business analytics and data visualization solutions with QMF

Query Management Facility Version 10 (QMF 10) lets you do more with your existing QMF investment than ever before. Built-in data visualizations and graphical page-based reports extend QMF usage from the traditional technical user to a broader community of business end users. QMF's new metadata layer simplifies the underlying data model, empowering non-technical users with self-service reporting and extends access to DB2 for z/OS across the enterprise, helping to further increase the return on your investment.
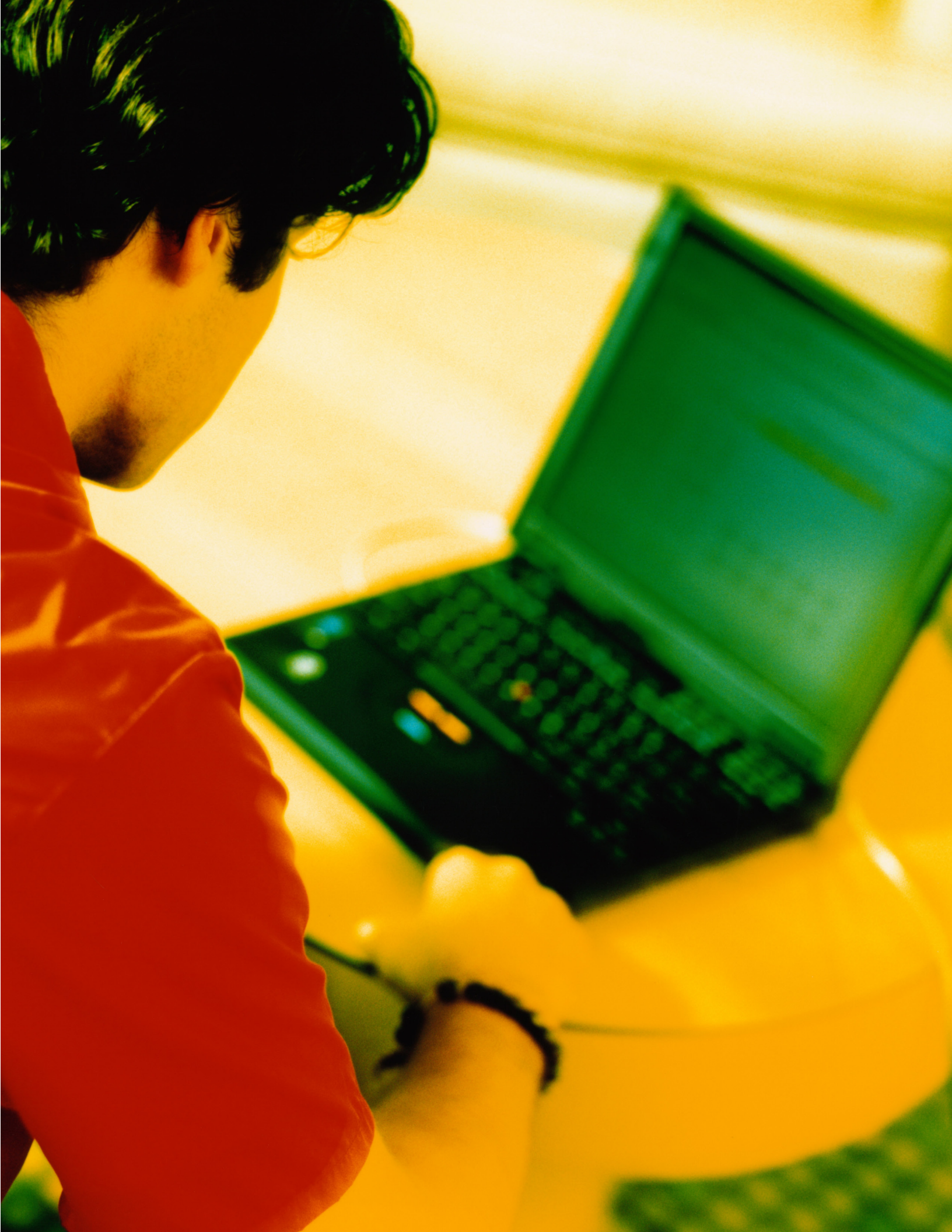
Summary

Improved resiliency, availability, flexibility and reliability—as well as greater cost savings due to reduced CPU usage, simpler database management and proven technology—all combine to make DB2 10 for z/OS one of the most powerful data servers currently available. The technology is established, and the design is elegant and simple.

Deployment of DB2 10 for your business means:

- Out-of-the-box CPU savings
- Proven resiliency for business-critical information
- Simplified application and warehouse deployment
- Enhanced query and reporting facilities

To our minds, that's an investment worth making. For more information, please contact the author of this article:

Surekha Parekh (surekhaparekh@uk.ibm.com)

[1] Early DB2 10 performance benchmarking and customer experience
has shown a up to 5% - 10% CPU reduction after rebinding. Actual
CPU reduction will, of course, vary depending on the specific customer
workload. Customers who have scalability issues, such as virtual storage
constraints or latching can see improvements. Memory improvements
can aid tuning. High-volume, short-running distributed transactions
can experience reduced CPU usage, using release deallocate.
revealed that DB2's concurrent sequential insert CPU time can, for
certain workloads, be reduced from 5% - 40%; queries can be improved
as much as 20% without access path change. A workload using SET
statements, IF statements and SYSDUMMY1 in native SQL procedures
achieved up to 20% CPU reduction. Customers moving from DB2 9
should expect the same CPU times for utilities, while customers moving
from DB2 V8 will see CPU reductions up to 20%.

Please Recycle