# Reducing Cost and Improving Performance with IBM DB2 Tools

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## Executive Summary

DB2 Tools and Utilities are a vital component for reducing cost and improving the performance, availability, and governance of your DB2 databases and applications. IBM offers a full complement of robust and affordable offerings across every DB2 management and administration category. Furthermore, IBM's investment in DB2 Tools is substantial and on-going. Whereas some mainframe tools vendors have significantly reduced (or stopped) introducing new offerings and functionality, IBM has increased its investment in DB2 tools, with new offerings and functionality being delivered on a regular basis. IBM continues to make significant investments in product development, technical support, migration and Implementation, and customer and industry partnerships. Your organization should consider deploying IBM's DB2 Tools and Utilities to reduce the cost, time, and effort involved in building and maintaining efficient DB2 databases and applications.

## The Need for Tools and Utilities

Modern enterprise applications rely on database management systems like DB2 to house the data that is the lifeblood of today's organizations. But DBMS software does not deliver 100% of the functionality needed to support large-scale database development. Database and data management tools that enhance the functionality of the DBMS are required to deliver robust performance, round-the-clock availability, and scalable applications.

Database tools perform the tasks that deliver added value to database applications. Through performance monitoring and management tools can improve response time allowing the business to more rapidly respond to changing business conditions. Tools can be used to deliver automation and standardization, thereby reducing the amount of time, effort, and human error involved in building and maintaining efficient database applications. And tools can improve business resiliency by ensuring that everything is properly backed up and recoverable in the event of problems.

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Proactive tools – that can find problems before they become detrimental to the business – can reduce downtime and improve availability. Every second of database downtime that causes the end user to not have access to his applications can result in lost revenue.

When problems occur, the database is frequently the first thing blamed. The database is "guilty until proven innocent" even if the problem is not always with the database. Reacting to, and solving problems, as quickly as possible requires strong skills and even stronger tools. Tools to manage the production environment are the first types of tool required because production systems run your business – and when they are down so is your business.

Database tools can also reduce the cost of building and supporting enterprise applications. By equipping your developers with tools that speed development time, you will improve the time-to-market for your applications. Furthermore, tools with the ability to analyze and glean intelligence from your business data can provide insights that cause you to conduct business differently and in less costly, more innovative ways.

And let's not forget about data governance and compliance. Being able to treat data in accordance with industry and governmental regulations is an important requirement in today's business climate.

So what is needed? Database tools!

## Types of DB2 Tools

As a business executive, you should be looking for tools that will enable you to deliver the maximum business value from your investment in DB2. There are several categories of tools that can help you to achieve this value.

***Database Administration and Change Management*** tools simplify and automate tasks such as creating database objects, examining existing structures, loading and unloading data, and making changes to databases. Without an administration tool these tasks require intricate, complex scripts to be developed and run. One of the most important administration tools is the database change manager. Without a robust, time-tested product that is designed to effect database changes, database changes can be quite time-consuming and error prone. A database change manager automates the creation and execution of scripts designed to implement required changes – and will ensure that data integrity is not lost.

One of the more important categories of DB2 tools offers ***Performance Management*** capabilities. Performance tools help to gauge the responsiveness and efficiency of SQL queries, database structures, and system parameters. Performance management tools should be able to examine and improve each of the three components of a database application: the DB2 subsystem, the database structures, and the application programs. Advanced performance tools can take proactive measures to correct problems as they happen.

***Backup and Recovery*** tools simplify the process of creating backups and recovering from those backup copies. By automating complex processes, simulating recovery, and implementing disaster recovery procedures these tools can be used to assure business resiliency, with no data being lost when the inevitable problems arise.

Another important category of DB2 tool is ***Utilities and Utility Management***. A utility is a single purpose tool for moving and/or verifying database pages; examples include LOAD, UNLOAD, REORG, CHECK, COPY, and RECOVER. Tools that implement and optimize utility processing, as well as those that automate and standardize the execution of DB2 utilities can greatly improve the availability of your DB2 applications.

***Governance and Compliance*** tools deliver the ability to protect your data and to assure compliance with industry and governmental regulations, such as HIPAA, Sarbanes-Oxley, and PCI DSS. In many cases business executives have to vouch for the accuracy of their company's data and that the proper controls are in place to comply with required regulations. Governance and compliance tools can answer questions like "who did what to which data when?" that are nearly impossible to otherwise answer.

And finally, ***Application Management*** tools help developers improve application performance and speed time-to-market. Such tools can improve database and program design, facilitate application testing including the creation and management of test data, and streamline application data management efforts. So where can you get tools like these to manage your DB2 environment? Why not from the same company that brings your DB2… IBM!

## Why You Should Consider IBM for DB2 Tools

There are a number of DB2 tools vendors "out there" but IBM should be at the top of your list for tools considerations. There are a number of reasons for this recommendation. First of all, consider IBM's expertise with the platform. IBM makes DB2 as well as the tools that manage it. This experience and knowledge helps to create robust management tools. And IBM understands the mainframe better than any other vendor… after all, IBM engineers and sells mainframes, too. In fact, IBM invented both mainframe technology, and the relational model upon which DB2 is based. So it should come as no surprise that IBM can offer synergy and exploitation of the System z architecture faster and more safely than other vendors.

The IBM DB2 Utilities were the first to market with zIIP support by redirecting utility maintenance work, specifically the BUILD portion of LOAD, REORG and REBUILD utilities, to the zIIP processor. And IBM has continued to improve the zIIP exploitation of its utilities: in DB2 10 for z/OS RUNSTATS has been augmented to redirect work to the zIIP.

### Support vs. Exploit

Be careful when reviewing DB2 tool vendors release specifications. Some vendors specifically differentiate between supporting and exploiting a new DB2 version or release. Software that supports a new release will continue to function the same as before DB2 was upgraded, but with no new capabilities. So, if a DBA tool, ***supports*** a new version of DB2, it can provide all of the services it did for the past release, as long as none of the new features of the new version of DB2 are used.

A DBA tool that ***exploits*** a new version provides the requisite functionality to operate on the new features of the new version of DB2.

So, to use a concrete example, IBM added support for hashing in Version 10 of DB2. A DBA tool can support DB2 v10 without operating on hashed data, but it must operate on hashes to exploit DB2 Version 10.

Be sure to understand the difference between supporting and exploiting a new version before proceeding with DB2 tools implementation.

By choosing IBM for DB2 tools you can be assured of immediate support for new DB2 versions. Because the IBM builds both DB2 and the tools that support it, you can be sure that your DB2 tools provider will know when a new version is imminent and both support and exploit new features before other vendors.

Consider some of the improvements IBM made to their DB2 Tools and Utilities for DB2 10. The IBM DB2 Utilities Suite offers improved autonomics, page sampling, and FlashCopy support. From version to version, CPU usage continues to shrink for all of the IBM DB2 Utilities, with CPU reductions up to 60% in some cases for DB2 V10.

The REORG utility was augmented to offer additional redirect of workload to the zIIP. The DB2 Administration Tool exploits DB2 10 with capabilities for managing the new security models, administering temporal objects, and support for new features such as in-line LOBs, index include columns, and hash access. The Log Analysis Tool delivers the ability to undo and redo changes to temporal tables. And the new version of the Automation Tool exploits real-time, sampling driven statistics collection and a new utility syntax monitor for enforcing your enterprise-wide standards. No other vendor offers such full exploitation so rapidly.

Furthermore, the continuing investment that IBM puts into its DB2 tools portfolio is substantial. The company continues to build and acquire new tools, while many of its competitors are content to continue selling the same portfolio of tools they did ten years ago. IBM, on the other hand, continues to introduce new DB2 tools, such as Smart Analytics Optimizer, a completely unique offering. This high performance, integrated combination of hardware and software, delivers

dramatically faster analytic query responses using advanced in-memory data processing on an IBM zEnterprise BladeCenter Extension (zBX) attached to and managed by the System z server.

IBM also recently delivered IBM DB2 Sort for z/OS to substantially improve the performance of sorting in IBM's DB2 utilities. Sorting can be a significant degradation point during the data movement and organization operations required of DB2 utility processing. IBM DB2 Sort for z/OS improves performance while optimizing overall system efficiency by exploiting the advanced facilities of the z/OS operating system and System z. Other DB2 tools also take advantage of the CPU and elapsed time reductions, for example IBM DB2 High Performance Unload for z/OS, DB2 Utilities Enhancement Tool for z/OS, and DB2 Log Analysis Tool.

Another example that highlights IBM's continuing investment is OMEGAMON Extended Insight, which identifies the source of response time problems for web-based and distributed applications running with a DB2 for z/OS backend. End-to-end performance monitoring is mandatory for today's modern applications that require multiple "layers" or components to deliver application service.

IBM's commitment to data and information solutions also can be seen in IBM's May 2011 announcement that it would invest $100 million for research on technologies and services that will enable clients to manage and exploit data as it continues to grow in diversity, speed and volume. The initiative focuses on research to drive the future of massive scale analytics, through advancing software, systems and services capabilities.

Consider also, IBM's Optim solutions, which deliver integrated data management capabilities for addressing data governance, retention, and regulatory compliance. With Optim your organization can implement appropriate audit policies to comply with data privacy and data retention regulations while also meeting your service level agreements for data-driven applications.

Furthermore, IBM recognizes that people use and manage DB2 in a variety of ways and on disparate platforms. And that is why IBM provides DB2 Tools with different interfaces (ISPF, GUI) and with the ability manage across platforms (z/OS, Linux for System z, LUW). Consider for example, the business intelligence offerings from IBM, including Cognos BI for Linux on System z, which combined with the IBM Information Server and other IBM information management products, enable the construction of a comprehensive Information On Demand / Information as a Service solution on System z.

And finally, in terms of the type and functionality of DB2 tools in its portfolio, nobody offers broader coverage of DB2 for z/OS. With a full complement of software for utility management, database administration, performance tuning, backup and recovery, application management and more, IBM offers a one-stop shop for DB2 management resources. Indeed, IBM offers literally everything you will need to make the most of DB2 in your shop.

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## Summary

IBM's DB2 for z/OS Tools can address all of your DB2 management, development, and optimization requirements. Investing in DB2 Tools from IBM is a wise decision that will help you to optimize your usage of DB2. And with IBM, you can be sure that your vendor will be there for you – when you need them to be to deliver the service you require as you utilize DB2 to bring value to your business. And isn't that what it is all about?

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**About Mullins Consulting, Inc.**

Mullins Consulting, Inc. is a database research and consulting company specializing in database performance, database administration, and database tools. The company was founded by Craig S. Mullins, a data management strategist, researcher, and consultant. Craig has nearly three decades of experience in all facets of database systems development including developing and teaching DB2 and SQL classes, systems analysis and design, database administration and system administrator, and data analysis and modeling. He has worked with DB2 for z/OS since Version 1 and has experience working with other database technology including Microsoft SQL Server, Sybase ASE and IMS.