# Ibm Manual Db2

*IBM® DB2® Version 11.1 for z/OS® (DB2 11 for z/OS or just DB2 11 throughout this book) is the fifteenth release of DB2 for IBM MVSTM. It brings performance and synergy with the IBM System z® hardware and opportunities to drive business value in the following areas. DB2 11 can provide unmatched reliability, availability, and scalability - Improved data sharing performance and efficiency - Less downtime by removing growth limitations - Simplified management, improved autonomics, and reduced planned outages DB2 11 can save money and save time - Aggressive CPU reduction goals - Additional utilities performance and CPU improvements - Save time and resources with new autonomic and application development capabilities DB2 11 provides simpler, faster migration - SQL compatibility, divorce system migration from application migration - Access path stability improvements - Better application performance with SQL and XML enhancements DB2 11 includes enhanced business analytics - Faster, more efficient performance for query workloads - Accelerator enhancements - More efficient inline database scoring enables predictive analytics The DB2 11 environment is available either for new installations of DB2 or for migrations from DB2 10 for z/OS subsystems only. This IBM Redbooks® publication introduces the enhancements made available with DB2 11 for z/OS. The contents help database administrators to understand the new functions and performance enhancements, to plan for ways to use*

*the key new capabilities, and to justify the investment in installing or migrating to DB2 11.*

*Procedures, triggers, and user-defined functions (UDFs) are the key database software features for developing robust and distributed applications. IBM Universal DatabaseTM for i (IBM DB2® for i) supported these features for many years, and they were enhanced in V5R1, V5R2, and V5R3 of IBM® OS/400® and V5R4 of IBM i5/OSTM. This IBM Redbooks® publication includes several of the announced features for procedures, triggers, and UDFs in V5R1, V5R2, V5R3, and V5R4. This book includes suggestions, guidelines, and practical examples to help you effectively develop IBM DB2 for i procedures, triggers, and UDFs. The following topics are covered in this book: External stored procedures and triggers Java procedures (both Java Database Connectivity (JDBC) and Structured Query Language for Java (SQLJ)) External triggers External UDFs This publication also offers examples that were developed in several programming languages, including RPG, COBOL, C, Java, and Visual Basic, by using native and SQL data access interfaces. This book is part of the original IBM Redbooks publication, Stored Procedures, Triggers, and User-Defined Functions on DB2 Universal Database for iSeries, SG24-6503-02, that covered external procedures, triggers, and functions, and also SQL procedures, triggers, and functions. All of the information that relates to external routines was left in this publication. All of the information that relates to SQL routines was rewritten and updated. This information is in the new IBM*

*Redbooks publication, SQL Procedures, Triggers, and Functions on IBM DB2 for i, SG24-8326. This book is intended for anyone who wants to develop IBM DB2 for i procedures, triggers, and UDFs. Before you read this book, you need to know about relational database technology and the application development environment on the IBM i server.*

*Straight from IBM: complete, proven guidelines for writing consistent, clear, concise, consumable, reusable, and easy to- translate content Brings together everything IBM has learned about writing outstanding technical and business content.*

*There has been a considerable focus on performance improvements as one of the main themes in recent IBM DB2® releases, and DB2 12 for IBM z/OS® is certainly no exception. With the high-value data retained on DB2 for z/OS and the z Systems platform, customers are increasingly attempting to extract value from that data for competitive advantage. Although customers have historically moved data off platform to gain insight, the landscape has changed significantly and allowed z Systems to again converge operational systems with analytics for real-time insight. Business-critical analytics is now requiring the same levels of service as expected for operational systems, and real-time or near real-time currency of data is expected. Hence the resurgence of z Systems. As a precursor to this shift, IDAA brought the data warehouse back to DB2 for z/OS and, with its tight integration with DB2, significantly reduces data latency as compared to the ETL processing that is involved with moving data to a stand-*

*alone data warehouse environment. That change has opened up new opportunities for operational systems to extend the breadth of analytics processing without affecting the mission-critical system and integrating near real-time analytics within that system, all while maintaining the same z Systems qualities of service. Apache Spark on z/OS and Linux for System z also allow analytics in-place, in real-time or near real-time. Enabling Spark natively on z Systems reduces the security risk of multiple copies of the Enterprise data, while providing an application developer-friendly platform for faster insight in a simplified and more secure analytics framework. How is all of this relevant to DB2 for z/OS? Given that z Systems is proving again to be the core Enterprise Hybrid Transactional/Analytical Processing (HTAP) system, it is critical that DB2 for z/OS can handle its traditional transactional applications and address the requirements for analytics processing that might not be candidates for these rapidly evolving targeted analytics systems. And not only are there opportunities for DB2 for z/OS to play an increasing role in analytics, the complexity of the transactional systems is increasing. Analytics is being integrated within the scope of those transactions. DB2 12 for z/OS has targeted performance to increase the success of new application deployments and integration of analytics to ensure that we keep pace with the rapid evolution of IDAA and Spark as equal partners in HTAP systems. This paper describes the enhancements delivered specifically by the query processing engine of DB2. This engine is generally called the optimizer or the Relational Data Services (RDS) components, which*

*encompasses the query transformation, access path selection, run time, and parallelism. DB2 12 for z/OS also delivers improvements targeted at OLTP applications, which are the realm of the Data Manager, Index Manager, and Buffer Manager components (to name a few), and are not identified here. Although the performance measurement focus is based on reducing CPU, improvement in elapsed time is likely to be similarly achieved as CPU is reduced and performance constraints alleviated. However, elapsed time improvements can be achieved with parallelism, and DB2 12 does increase the percentage offload for parallel child tasks, which can further reduce chargeable CPU for analytics workloads.*

*External Procedures, Triggers, and User-Defined Functions on IBM DB2 for i*

*Certification Study Guide*

*OSA-Express Implementation Guide*

*InfoSphere Data Replication for DB2 for z/OS and WebSphere Message Queue for z/OS: Performance Lessons*

*DB2 Universal Database SQL Developer's Guide*

*AS/400*

This is a practical hands-on book with clear instructions and lot of code examples. It takes a simple approach, guiding you through different architectural topics using realistic sample projects

The requirements for a database management system (DBMS) have included support for

very large and complex data objects. DB2 UDB for OS/390 Version 6 introduced the support for large objects (LOBs): they can contain text documents, images, or movies, and can be stored directly in the DBMS with sizes up to 2 gigabytes per object and 65,536 TB for a single LOB column in a 4,096 partition table. The introduction of these new data types has implied some changes in the administration processes and programming techniques. The book Large Objects with DB2 for z/OS and OS/390, SG24-6571, introduced and described the usage of LOBs with DB2 for z/OS at Version 7 level. Major enhancements for LOB manipulation have been introduced with DB2 UDB for z/OS Version 8 and DB2 Version 9.1 for z/OS (DB2 9 in this book). These enhancements include performance functions such as the avoidance of LOB locks and DRDA LOB flow optimization, usability functions such as file reference variables, FETCH CONTINUE, and the automatic creation of objects. DB2 utilities provide integrated support with LOAD and UNLOAD, Cross Loader, REORG, CHECK DATA, and CHECK LOB. In this IBM Redbooks publication, we provide a totally revised description of the DB2 functions for LOB support as well as useful information about how to design and implement LOBs. We also offer examples of their use, programming considerations, and the enhanced processes used for their administration and maintenance. We also detail how SAP solutions use LOBs. This book replaces the previous book, Large Objects with DB2 for z/OS and OS/390, SG24-6571, for DB2

Version 8 and Version 9.1. Please note that the additional material referenced in the text is not available from IBM.

As IBM® continues to enhance the functionality, performance, and availability of IBM Db2®, the utilities have made significant strides towards self-management. IBM Db2 for z/OS utilities is leading the trend towards autonomics. During the last couple of versions of Db2 for z/OS, and through the maintenance stream, new features and enhancements have been delivered to further improve the performance and functionality of the Db2 utilities. The intent of this IBM RedpaperTM publication is to help Db2 Database Administrators, Db2 System Programmers, and anyone who runs Db2 for z/OS utilities implement best practices. The intent of this paper is not to replicate the Db2 for z/OS Utilities Reference Guide or the Db2 for z/OS Installation Guide. This paper describes and informs you how to apply real-life practical preferred practices for the IBM Db2 for z/OS Utilities Suite. The paper concentrates on the enhancements provided by Db2 utilities, regardless of the version, albeit some functions and features are available only in Db2 12 for IBM z/OS®.

IBM® DB2® Version 10.1 for z/OS® (DB2 10 for z/OS or just DB2 10 throughout this book) is the fourteenth release of DB2 for MVSTM. It brings improved performance and synergy with the System z® hardware and more opportunities to drive business value in the following areas: Cost savings and compliance through optimized innovations DB2 10

delivers value in this area by achieving up to 10% CPU savings for traditional workloads and up to 20% CPU savings for nontraditional workloads, depending on the environments. Synergy with other IBM System z platform components reduces CPU use by taking advantage of the latest processor improvements and z/OS enhancements. Streamline security and regulatory compliance through the separation of roles between security and data administrators, column level security access, and added auditing capabilities. Business insight innovations Productivity improvements are provided by new functions available for pureXML®, data warehousing, and traditional online TP applications Enhanced support for key business partners that allow you to get more from your data in critical business disciplines like ERP Bitemporal support for applications that need to correlate the validity of data with time. Business resiliency innovations Database on demand capabilities to ensure that information design can be changed dynamically, often without database outages DB2 operations and utility improvements enhancing performance, usability, and availability by exploiting disk storage technology. The DB2 10 environment is available either for brand new installations of DB2, or for migrations from DB2 9 for z/OS or from DB2 UDB for z/OS Version 8 subsystems. This IBM Redbooks® publication introduces the enhancements made available with DB2 10 for z/OS. The contents help you understand the new functions and performance enhancements, start planning for exploiting the key new capabilities, and justify the

investment in installing or migrating or skip migrating to DB2 10.

High Availability and Disaster Recovery Options for DB2 for Linux, UNIX, and Windows

Altova® XMLSpy® 2013 User & Reference Manual

Conventions for Writers and Editors

With HTML, CSS, JSP, PHP, ASP. NET, and JavaScript

Explore techniques to master database programming and administration tasks in IBM Db2

DB2 Developer's Guide

OptimTM Performance Manager Extended Edition, a follow-on to DB2® Performance Expert, is one of the key products of the IBM® Optim Solution. Optim Performance Manager Extended Edition provides a comprehensive, proactive performance management approach. It helps organizations resolve emergent database problems before they impact the business. This IBM Redbooks® publication describes the architecture and components of Optim Performance Manager Extended Edition. We provide information for planning the deployment of Optim Performance Manager and detail steps for successful installation, activation, and configuration of Optim Performance Manager and the Extended Insight client. Optim Performance Manager delivers a new paradigm in terms of how it is used to monitor and manage database and database application performance issues. We describe individual product dashboards and reports and discuss, with various scenarios, how they can be used to identify, diagnose, prevent, and solve database performance problems.

Tis guide is intended for students learning computer operations and administration on the AS/400 computer system. Offering a unique approach to learning AS/400 operations with extensive hands-on labs, self-tests, and review questions, this book uses real-world situations to enable users to be productive with AS/400 operations. This book also covers the requirements of the two IBM AS/400 certification exams: AS/400 Associate System Operator Certification (test 052) and AS/400 Professional System Operator Certification (test 053). The primary goal of this book is to teach users how to perform day-to-day operations on an AS/400 computer system, including IPL, starting and stopping the system, backup and recovery, and system cleanup. Procedures covered include creating and maintaining user environments, device configuration and management, security implementation, work and data management, and TCP/IP configuration. Console operations discussed include jobs, message handling, and working with spool files and peripheral devices. Functions of Operations Navigator are covered, and Electronic Customer Support (ECS) and PTF upgrades are also introduced.

IBM® Information Management System (IMSTM) provides leadership in performance, reliability, and security to help you implement the most strategic and critical enterprise applications. IMS, IMS utilities, and IMS tools continue to evolve to provide value and meet the needs of enterprise customers. With IMS 12, integration and open access improvements provide flexibility and support business growth requirements. Scalability improvements have been made to the well-known performance, efficiency, availability, and resilience of IMS by using 64-bit storage. In this IBM Redbooks® publication we provide IMS performance monitoring and tuning information by describing the key IMS performance functions and by showing how to monitor and tune them with traditional and new strategic applications. This book is for database administrators and system programmers. We summarize methods and tools for monitoring and tuning IMS systems, describe IMS system-wide performance, database, and transaction

considerations. Based on lab measurements, we provide information about recent performance enhancements that are available with IMS 12, and advice about setting performance-related parameters.
IBM® DB2® 12 for z/OS® delivers key innovations that increase availability, reliability, scalability, and security for your business-critical information. In addition, DB2 12 for z/OS offers performance and functional improvements for both transactional and analytical workloads and makes installation and migration simpler and faster. DB2 12 for z/OS also allows you to develop applications for the cloud and mobile devices by providing self-provisioning, multitenancy, and self-managing capabilities in an agile development environment. DB2 12 for z/OS is also the first version of DB2 built for continuous delivery. This IBM Redbooks® publication introduces the enhancements made available with DB2 12 for z/OS. The contents help database administrators to understand the new functions and performance enhancements, to plan for ways to use the key new capabilities, and to justify the investment in installing or migrating to DB2 12.

IBM Optim Performance Manager for DB2 for Linux, UNIX, and Windows

Modernize Your IBM DB2 for IBM z/OS Maintenance with Utility Autonomics

DB2 for Z/OS Application Programming Topics

Subsystem and Transaction Monitoring and Tuning with DB2 11 for z/OS

Developing Business Applications for the Web

DB2 9 for z/OS: Using the Utilities Suite

*This IBM® Redbooks® publication focuses on gathering the correct technical information, and laying out simple guidance for optimizing code performance on IBM POWER8® processor-based systems that run the IBM AIX®, IBM i, or Linux operating systems. There is straightforward*

*performance optimization that can be performed with a minimum of effort and without extensive previous experience or in-depth knowledge. The POWER8 processor contains many new and important performance features, such as support for eight hardware threads in each core and support for transactional memory. The POWER8 processor is a strict superset of the IBM POWER7+TM processor, and so all of the performance features of the POWER7+ processor, such as multiple page sizes, also appear in the POWER8 processor. Much of the technical information and guidance for optimizing performance on POWER8 processors that is presented in this guide also applies to POWER7+ and earlier processors, except where the guide explicitly indicates that a feature is new in the POWER8 processor. This guide strives to focus on optimizations that tend to be positive across a broad set of IBM POWER® processor chips and systems. Specific guidance is given for the POWER8 processor; however, the general guidance is applicable to the IBM POWER7+, IBM POWER7®, IBM POWER6®, IBM POWER5, and even to earlier processors. This guide is directed at personnel who are responsible for performing migration and implementation activities on POWER8 processor-based systems. This includes system administrators, system architects, network administrators, information architects, and database administrators (DBAs).*

*Innovations for improved scalability, security, and resiliency*
*This book focuses on using common Web tools to develop business applications. Professional business programmers who are new to Web development will quickly acquire the relevant information they need, starting with HTML and CSS. The book goes beyond simple HTML and introduces other common Web technologies, including Java Server Pages (JSP), PHP, ASP.NET, and JavaScript. The book shows how those technologies interact with HTML and how developers can use them to develop and deploy business applications that users access via the Web. This book is written by business programmers and educators for business programmers. It is not just an introduction to HTML, but an introduction to the most common tools any business programmer needs to develop browser-based applications. Upon completion of the book, a business developer or student will have learned to develop and implement a completed browser-based business application.*
*Mastering material for dealing with DBA certification exams Key Features Prepare yourself for the IBM C2090-600 certification exam Cover over 50 Db2 procedures including database design, performance, and security Work through over 150 Q&As to gain confidence on each topic Book Description IBM Db2 is a relational database management system (RDBMS) that helps you store, analyze, and retrieve data efficiently. This comprehensive book is designed to help you master*

*all aspects of IBM Db2 database administration and prepare you to take and pass IBM's Certification Exams C2090-600. Building on years of extensive experience, the authors take you through all areas covered by the test. The book delves deep into each certification topic: Db2 server management, physical design, business rules implementation, activity monitoring, utilities, high availability, and security. IBM Db2 11.1 Certification Guide provides you with more than 150 practice questions and answers, simulating real certification examination questions. Each chapter includes an extensive set of practice questions along with carefully explained answers. This book will not just prepare you for the C2090-600 exam but also help you troubleshoot day-to-day database administration challenges. What you will learn Configure and manage Db2 servers, instances, and databases Implement Db2 BLU Acceleration and a DB2 pureScale environment Create, manage, and alter Db2 database objects Use the partitioning capabilities available within Db2 Enforce constraint checking with the SET INTEGRITY command Utilize the Db2 problem determination (db2pd) and dsmtop tools Configure and manage HADR Understand how to encrypt data in transit and at rest Who this book is for The IBM Db2 11.1 Certification Guide is an excellent choice for database administrators, architects, and application developers who are keen to obtain certification in Db2. Basic*

*understanding of Db2 is expected in order to get the most out of this guide.*
*WebSphere Message Broker Basics*
*Db2 for z/OS Utilities in Practice*
*DB2 11 for z/OS Technical Overview*
*DB2 Answers!*
*DB2 9 for Z/OS Stored Procedures*
*IBM Db2 11.1 Certification Guide*

***IBM DB2 12 for z/OS Technical OverviewIBM Redbooks***

***The DB2® pureXML® feature offers sophisticated capabilities to store, process and manage XML data in its native hierarchical format. By integrating XML data intact into a relational database structure, users can take full advantage of DB2's relational data management features. In this IBM® Redbooks® publication, we document the steps for the implementation of a simple but meaningful XML application scenario. We have chosen to provide samples in COBOL and JavaTM language. The purpose is to provide an easy path to follow to integrate the XML data type for the traditional DB2 for z/OS® user. We also add considerations for the data administrator and suggest best practices for ease of use and better performance.***

***-- Structured Query Language (SQL) is critical to DB2 -- SQL is a standardized query language for requesting information from a database. Although there are different dialects of SQL, it is nevertheless the closest thing to a standard query language that currently exists. -- DB2 Market Share -- IBM's DB2 database took the lead in the database market in license revenue for 1998. Now controlling 32.3% of the market. -- DB2 -- Or, Database 2, is a family of relational database products offered by IBM, and it runs on a wide variety of computing platforms, including Windows, UNIX, and OS/2. Using SQL, users can obtain data simultaneously from DB2 and other databases. -- Hands-on information -- Shows readers how to develop DB2 applications using embedded SQL. Walks readers through the basic steps needed to build, test, and debug embedded SQL applications that communicate with DB2 databases. -- Full explanation -- Each SQL statement available will be explained in detail and tested with C++ and JAVA programming examples that illustrate how to embed each SQL statement in an application source code. This will be available both in the book, and on the disc. -- Valuable CD-ROM -- The disc contains the latest version of IBM DB2 Universal Server, plus all of the code from the book and extra***

***development tools and utilities. Approximately 350 Java and C++ example programs are provided in this book.***

***This IBM® Redbooks® publication will help you to install, tailor, and configure the Open Systems Adapter (OSA) features that are available on IBM zEnterprise® servers. It focuses on the hardware installation and the software definitions that are necessary to provide connectivity to LAN environments. This information will help you with planning and system setup. This book also includes helpful utilities and commands for monitoring and managing the OSA features. This information will be helpful to systems engineers, network administrators, and system programmers who plan for and install OSA features. The reader is expected to have a good understanding of IBM System z® hardware, Hardware Configuration Definition (HCD) or the input/output configuration program (IOCP), Open Systems Adapter Support Facility (OSA/SF), Systems Network Architecture/Advanced Peer-to-Peer Networking (SNA/APPN), and TCP/IP protocol.***

***DB2 10 for z/OS Technical Overview***

***DB2 11 for Z/OS Database Administration***

***Certified Tech Support***
***LOBs with DB2 for Z/OS***
***Exploring IBM Db2 for z/OS Continuous Delivery***

**This book is designed for professional application developers and college-level students who want to become developers. It features thorough and updated coverage of database design and SQL for DB2. Topics covered include database concepts, SQL inquiries, web applications, and database security. The material is reinforced by numerous illustrations, examples, and exercises.**

**The Application System/400 (AS/400) is IBM's family of full-range, general purpose computers, which encompass a broad range of related models. This book is a complete guide to the AS/400 system, utilities, database structure, and programming.**

**IBM® continues to enhance the functionality, performance, availability, and ease of use of IBM DB2® utilities. This IBM Redbooks® publication is the result of a project dedicated to the current DB2 Version 9 Utilities Suite**

**product. It provides information about introducing the functions that help set up and invoke the utilities in operational scenarios, shows how to optimize concurrent execution of utilities and collect information for triggering utilities execution, and provides considerations about partitioning. It also describes the new functions provided by several utilities for SHARE LEVEL CHANGE execution, which maximize availability and the exploitation of DFSMS constructs by the BACKUP and RESTORE SYSTEM utilities. This book concentrates on the enhancements provided by DB2 UDB for z/OS Version 8 and DB2 for z/OS Version 9. It implicitly assumes a basic level of familiarity with the utilities provided by DB2 for z/OS and OS/390® Version 7.**

**Artificial intelligence (AI) enables computers and machines to mimic the perception, learning, problem-solving, and decision-making capabilities of the human mind. AI development is made possible by the availability of large amounts of data and the corresponding development and wide**

**availability of computer systems that can process all that data faster and more accurately than humans can. What happens if you infuse AI with a world-class database management system, such as IBM Db2®? IBM® has done just that with Db2 AI for z/OS (Db2ZAI). Db2ZAI is built to infuse AI and data science to assist businesses in the use of AI to develop applications more easily. With Db2ZAI, the following benefits are realized: Data science functionality Better built applications Improved database performance (and DBA's time and efforts are saved) through simplification and automation of error reporting and routine tasks Machine learning (ML) optimizer to improve query access paths and reduce the need for manual tuning and query optimization Integrated data access that makes data available from various vendors including private cloud providers. This IBM Redpaper® publication helps to simplify your installation by tailoring and configuration of Db2 AI for z/OS®. It was written for system programmers, system administrators, and database administrators.**

**Installing and Configuring IBM Db2 AI for IBM z/OS v1.4.0**
**DB2 9 for Z/OS**
**Cost Savings... Right Out of the Box**
**DB2 pureXML Cookbook**
**Stronger and Faster**
**Database Design and SQL for DB2**

*Written primarily for database administrators who work on z/OS and who are taking the IBM DB2 11 for z/OS Database Administration certification exam (Exam 312), this resource also appeals to those who simply want to master the skills needed to be an effective database administrator of z/OS mainframes. This study guide is designed to provide those seeking certification with an intense overview of DB2 11 for z/OS and all topics covered on the exam. Sample questions are provided at the end of each chapter, along with answers and explanations.*

*This IBM® Redbooks® publication discusses in detail the facilities of DB2® for z/OS®, which allow complete monitoring of a DB2 environment. It focuses on the use of the DB2 instrumentation facility component (IFC) to provide monitoring of DB2 data and events and includes suggestions for related tuning. We discuss the collection of statistics for the verification of performance of the various*

*components of the DB2 system and accounting for tracking the behavior of the applications. We have intentionally omitted considerations for query optimization; they are worth a separate document. Use this book to activate the right traces to help you monitor the performance of your DB2 system and to tune the various aspects of subsystem and application performance.*

*DB2 pureXML Cookbook Master the Power of the IBM Hybrid Data Server Hands-On Solutions and Best Practices for Developing and Managing XML Database Applications with DB2 More and more database developers and DBAs are being asked to develop applications and manage databases that involve XML data. Many are utilizing the highly praised DB2 pureXML technology from IBM. In the DB2 pureXML Cookbook, two leading experts from IBM offer the practical solutions and proven code samples that database professionals need to build better XML solutions faster. Organized by task, this book is packed with more than 700 easy-to-adapt "recipe-style" examples covering the entire application lifecycle-from planning and design through coding, optimization, and troubleshooting. This extraordinary library of recipes includes more than 250 XQuery and SQL/XML queries. With the authors' hands-on guidance, you'll learn how to combine pureXML "ingredients" to efficiently perform virtually any XML data management task, from the simplest to the most advanced. Coverage includes pureXML in DB2 9 for*

*z/OS and DB2 9.1, 9.5, and 9.7 for Linux, UNIX, and Windows Best practices for designing XML data, applications, and storage objects Importing, exporting, loading, replicating, and federating XML data Querying XML data, from start to finish: XPath and XQuery data model and languages, SQL/XML, stored procedures, UDFs, and much more Avoiding common errors and inefficient XML queries Converting relational data to XML and vice versa Updating and transforming XML documents Defining and working with XML indexes Monitoring and optimizing the performance of XML queries and other operations Using XML Schemas to constrain and validate XML documents XML application development-including code samples for Java, .NET, C, COBOL,PL/1, PHP, and Perl*

*Understanding the impact of workload and database characteristics on the performance of both DB2®, MQ, and the replication process is useful for achieving optimal performance.Although existing applications cannot generally be modified, this knowledge is essential for properly tuning MQ and Q Replication and for developing best practices for future application development and database design. It also helps with estimating performance objectives that take these considerations into account. Performance metrics, such as rows per second, are useful but imperfect. How large is a row? It is intuitively, and correctly, obvious that replicating small DB2 rows,*

*such as 100 bytes long, takes fewer resources and is more efficient than replicating DB2 rows that are tens of thousand bytes long. Larger rows create more work in each component of the replication process. The more bytes there are to read from the DB2 log, makes more bytes to transmit over the network and to update in DB2 at the target. Now, how complex is the table definition? Does DB2 have to maintain several unique indexes each time a row is changed in that table? The same argument applies to transaction size: committing each row change to DB2 as opposed to committing, say, every 500 rows also means more work in each component along the replication process. This RedpaperTM reports results and lessons learned from performance testing at the IBM® laboratories, and it provides configuration and tuning recommendations for DB2, Q Replication, and MQ. The application workload and database characteristics studied include transaction size, table schema complexity, and DB2 data type.*

*Performance Optimization and Tuning Techniques for IBM Power Systems Processors Including IBM POWER8*

*DB2 12 for z Optimizer*

*Extremely pureXML in DB2 10 for z/OS*

*IBM DB2 12 for z/OS Technical Overview*

*DB2 10 for Z/OS*

*Distributed Functions*

IBM® DB2® for IBM z/OS® helps lower the cost of managing data by automating administration, increasing storage efficiency, improving performance, and simplifying the deployment of virtual appliances. By automating tasks such as memory allocation, storage management, and business policy maintenance, DB2 is able to perform many management tasks itself, freeing up Database Administrators to focus on new projects. This IBM Redbooks® publication introduces autonomics for DB2 for z/OS. IBM provides several different components that, when combined, can create an autonomic database environment. All these respective components cover certain aspects of autonomics, which can collaborate into one coherent solution. In our evolution of autonomics and the need to move to smarter systems there has been a bigger drive to the concept of "Active" versus "Passive" autonomics. With the inclusion of the IBM Management Console for IMSTM and DB2 for z/OS and the Autonomics Director, it is now easier than ever to make that transition by leveraging the strength of the DB2 Utilities Solution Pack for z/OS all in one standardized and centralized interface. This publication guides you through the business reasons for adopting autonomic solutions, and provides step-by-step guidance to implement these capabilities in your DB2 for z/OS configuration. This publication is of interest primarily to DB2 Database Administrators and DB2 Systems Programmers, and for anyone looking to understand the benefits of DB2 autonomic solutions.

Time to market, flexibility, and cost reduction are among the top concerns common to all IT executives. If significant resource investments are placed in mature systems, IT organizations need to balance old and new technology. Older technology, such as non-IBM pre-relational databases, is costly, inflexible, and non-standard. Users store their information on the

mainframe and thus preserve the skills and qualities of service their business needs. But users also benefit from standards-based modernization by migrating to IBM® DB2® for z/OS®. With this migration, users deliver new application features quickly and respond to changing business requirements more effectively. When migrating, the main decision is choosing between conversion and re-engineering. Although the rewards associated with rebuilding mature applications are high, so are the risks and customers that are embarking on a migration need that migration done quickly. In this IBM Redbooks® publication, we examine how to best approach the migration process by evaluating the environment, assessing the application as a conversion candidate, and identifying suitable tools. This publication is intended for IT decision makers and database administrators who are considering migrating their information to a modern database management system.

Marketshare for DB2 has been growing steadily over the past 5 years and with the announcement of DB2 Universal Database V8 (T-Rex), the product has never had more momentum. DB2 owns about 30 percent of the database market--the same as Oracle. Not only is the product used in many Fortune 500 companies, but it is becoming very popular in small to medium sized businesses as well. This book provides the reader with a comprehensive reference and research tool for DB2 for the mainframe. Official material is awkwardly written, spans over a dozen manuals in PDF format, and lacks real-world guidance. Author, Craig Mullins, consistently hears from readers of past editions that they rely on this book as their primary reference for DB2. Craig Mullins is constantly being asked when it will support a new release.

A comprehensive Perl reference contains a CD-Rom with sample scripts and applications from

the book, in addition to appendices for the advanced Perl user with an alphabetized function reference for the built-in Perl functions, and much more. Original. (All Users).

System, Utilities, Database, and Programming

Through the Call and Beyond

Understanding AS/400 System Operations

IBM DB2 9.7 Advanced Administration Cookbook

IMS 12 Selected Performance Topics

SQL/400 Developer's Guide

This IBM® RedpaperTM publication provides key information about continuous delivery in IBM Db2® 12 for z/OS®. It discusses how continuous delivery works and the changes that have been made in Db2 12 to support continuous delivery, such as adding a new catalog table and changing existing catalog tables. Also the paper covers the effects on applications and how to take advantage of new function provided using the continuous delivery model.

Alphabetically, ordered by topic, speedy solutions are within reach of one's desktop. Convenience and savings are found in one book so that readers can avoid spending exorbitant amounts of money on tech support calls.

DB2® 10 for z/OS can reduce the total DB2 CPU demand from 5-20%, compared to DB2 9, when you take advantage of all the enhancements. Many CPU reductions are built in directly to DB2, requiring no

application changes. Some enhancements are implemented through normal DB2 activities through rebinding, restructuring database definitions, improving applications, and utility processing. The CPU demand reduction features have the potential to provide significant total cost of ownership savings based on the application mix and transaction types. Improvements in optimization reduce costs by processing SQL automatically with more efficient data access paths. Improvements through a range-list index scan access method, list prefetch for IN-list, more parallelism for select and index insert processing, better work file usage, better record identifier (RID) pool overflow management, improved sequential detection, faster log I/O, access path certainty evaluation for static SQL, and improved distributed data facility (DDF) transaction flow all provide more efficiency without changes to applications. These enhancements can reduce total CPU enterprise costs because of improved efficiency in the DB2 10 for z/OS. DB2 10 includes numerous performance enhancements for Large Objects (LOBs) that save disk space for small LOBs and that provide dramatically better performance for LOB retrieval, inserts, load, and import/export using DB2 utilities. DB210 can also more effectively REORG partitions that contain LOBs. This IBM Redbooks® publication® provides an overview of the performance impact of DB2 10 for z/OS discussing the overall performance and possible impacts when moving

from version to version. We include performance measurements that were made in the laboratory and provide some estimates. Keep in mind that your results are likely to vary, as the conditions and work will differ. In this book, we assume that you are somewhat familiar with DB2 10 for z/OS. See DB2 10 for z/OS Technical Overview, SG24-7892-00, for an introduction to the new functions.

As organizations strive to do more with less, IBM® DB2® for Linux, UNIX, and Windows provides various built-in high availability features. DB2 further provides high availability solutions by using enterprise system resources with broad support for clustering software, such as IBM PowerHA® SystemMirror®, IBM Tivoli® System Automation for Multiplatforms (Tivoli SA MP), and Microsoft Windows Cluster Server. This IBM Redbooks® publication describes the DB2 high availability functions and features, focusing on High Availability Disaster Recovery (HADR) in the OLTP environment. The book provides a detailed description of HADR, including setup, configuration, administration, monitoring, and preferred practices. This book explains how to configure Cluster software PowerHA, Tivoli SA MP, and MSCS with DB2 and show how to use these products to automate HADR takeover. DB2 also provides unprecedented enterprise-class disaster recovery capability. This book covers single system view backup, backup and restore with snapshot backup, and the db2recovery command,

in detail. This book is intended for database administrators and information management professionals who want to design, implement, and support a highly available DB2 system.

Streamline Business with Consolidation and Conversion to DB2 for z/OS

DB2 10 for z/OS Performance Topics

Master the Power of the IBM Hybrid Data Server

The IBM Style Guide